

# AMERICAN VETERINARY REVIEW.

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## EDITORIAL.

### EUROPEAN CHRONICLES.

PARIS, December 15, 1902.

BROKEN KNEES AND SADDLE SORES.—Although some special autoplasmic measures have found their application in veterinary surgery, such as chirtoplasty and keratoplasty, there are others which are yet either only under consideration, or, again, have remained ignored. And, yet, if one will consider a moment, there are many cases where autoplasmic interference is indicated.

To speak of one, which has in France made great progress in later years, I will mention that which has been made known by Mr. Vinsot, the inventor of the reversible operating stock, which our readers know. This treatment was introduced against ugly cicatrices of badly broken knees, so as to remove them, and hence increase the market value of the horse. It is simple: consisting in the removal in the front of the knee, by two more or less curved incisions, of a piece of skin, melon-slice shape, with the cicatrix in centre and the edges of the new-made wound closed with sutures. The knee being afterwards wrapped into an immovable dressing, this is left in place for a length of time sufficient to insure complete and firm union. Of course, all the various steps of the operation must be carried out under the most strict antiseptic attentions.

The result is certainly grand. Knees that had large ugly blemishes, broad hairless cicatrices, etc., are, after the Vinsot

treatment, left with only a single straight line, which is covered with hairs, is hardly perceptible, and certainly depreciating very little the value of the animal.

Such is the first result, which was expected. But it seems that there is another, which is pathologically more important.

A military veterinarian (Mr. Guerruan) tells us that in investigating the indications for the Vinsot treatment, he has found that the ugly blemishes were not superficial only, but that in their formation, in the mode of cicatrization of the wounds of the knee, there occurred cicatricial adhesions, which took place between the skin and the tissues underneath, and that those adhesions were the direct cause of the repeated falls of horses having broken knees, because of their interfering with the play of the joint.

Conclusion : In applying the Vinsot treatment one will remove cicatricial adhesions as well as the ugly blemishes, and the result will be removal of the cause of repeated falls, and increased value of an animal, which will then be able to render greater and longer services.

The investigations of Mr. Guerruan were made for another object, viz. : the propriety of autoplasic treatment of those wide and ugly wounds and cicatrices produced by harness, saddles, etc., which are so common in cavalry horses, and in many points are very similar to those accompanying broken knees. Here the market value, as far as ugly appearance, may not be as important ; but the repeated disabled condition of animals carrying such cicatrices because of irritation on the cicatricial tissue, is not to be overlooked. And, again, if one carefully examined the deep structures underneath it and noticed the condition of cicatricial adhesions, the similarity is yet more evident.

Cicatrices, of broken knees, are amenable to treatment by autoplasty, according to Mr. Guerruan. Cicatricial blemishes resulting from harness, saddles, etc., are also, and the result will be as great, viz. : relief from trouble which may disable an animal for a variable length of time at any moment. Remove the

cicatricial surface, under strict antiseptic cares, in the centre of a melon-sliced incision, bring carefully and neatly the edges together with sutures, protect the wound with an antiseptic dressing and a similar result will be obtained; a single linear cicatrix well covered with hairs and in the centre of a skin moving freely over the tissues underneath.

This new application of autoplasty may yet be wanting the control of long experience, but still has done well. The inventor has operated on 40 animals, and in all has obtained a radical recovery in a few weeks, none of them afterwards have been disabled again because of swelling or irritation of old saddle galls, stickfasts, or the like. He has just avoided the premature reform of a number of cavalry horses which unoperated would have been almost useless for their work.

Parhaps some of our American *confrères* in the Army will try autoplasty also.

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TUBERCULOSIS.—The question of the unicity of bovine and human tuberculosis is not yet near a decision, and it is most likely that notwithstanding the rumors that the next Congress on Tuberculosis will see the question settled, it is probable that it will not. In the meanwhile observers are at work, experiments are made, and facts are daily accumulating either in scientific papers or before scientific bodies, which tell of the earnestness with which the researches are carried out.

Indeed, let us open any medical paper, and it is upon articles on tuberculosis that our attention is called. In the *Munch. med. Wochenschrift* for September, Max Shottelius records a series of experiments that he has made on the transmission of tuberculosis to bovines in feeding them with human sputa. He experimented on one cow and two calves, giving them 50 grammes of sputa each, which they took in twenty-four meals in the space of three months. The cow took mesenteric and enteric tuberculosis. In the calves only a few mesenteric and sub-maxillary glands were affected. In all three the bacilli of Koch were found. Witnesses were healthy. Shottelius con-

cluded from this experiment the statement of the unicity of the two tuberculososes.

Then in the *Deutsche medicin. Wochen.* of October 2d, A. Moeller publishes that he has fed two calves, free from disease, for four months with 10 c.c. of tuberculous sputa every day, and that neither seemed to have the slightest indisposition, that they kept putting on fat, and when killed they were found free from any tuberculous lesion. Naturally here is a different conclusion from the above.

And now I read in the *Semaine Medicale*, the brief *resumé* of a case of transmission to man, by accidental inoculation of bovine tuberculosis, which is itself reinoculated experimentally and successfully to a calf. This record is made by Drs. Spronck and Hoefnagel, of Utrecht. Truly the inoculation to the man gave a localized affection, but yet the result has its value, and again the corresponding cubital gland was diseased, and the patient, although suffering with cough and having dullness of the apex of the right lung, had not presented tuberculous bacilli in his expectorations.

While speaking of this long agitated question, I might also mention the conference which I had the pleasure to hear from Prof. Nocard on the second series of experiments which he has made under directions of the Société de Médecine Vétérinaire Pratique. But it was too interesting and of too important value to curtail it. I preferred to send it in full and it will be found elsewhere in this number, and our readers will be able to form their own ideas and draw conclusions. It is certainly difficult to deny the weight that the results of those experiments carries, or to imagine what contrary arguments can be brought against them.

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And, always on the subject of tuberculosis, I may be here permitted to send our friends a plate illustrating a case which Prof. Petit has presented lately at the Société Centrale, a case of *tuberculous ulcerations of the face*, which the author prefers to the name of *lupus*, commonly in use for such trouble. The



head is that of a cat, which had died in an extreme state of emaciation, because of tuberculosis.



At the autopsy there was only *pulmonary granulia*, no lesions of the tracheo-bronchial glands, and the ulcerations on the face—all constituting the only post-mortem lesions of tuberculosis. The face was literally eaten up with deep ulcers, occupying the nose, the cheeks, the eyelids and extending to the right ear. The superior wall of the nasal fossæ is gone in two places, the turbinated bones are exposed (P). The subglossal and retro-pharyngeal glands were hypertrophied, yellow and granular on sections. Pus taken from the surface of the ulcerations contained an enormous number of tuberculous bacilli, which were also found in the glands and the miliary deposits in the lungs. These lesions are reported as comparatively rare.

"LES MALADIES MICROBIENNES" (MICROBIAN DISEASES).—It has been our pleasure on several occasions to allude to a unique French book, written by Prof. Nocard and Prof. Leclainche, and published by the house of Nasson & Co., here. To-day we cannot refrain from referring to it again, as we are receiving a copy of the third edition, entirely rewritten and considerably enlarged. "Les maladies Microbiennes" (Microbian Diseases) has just been issued. Those in 1896 who read the single volume of that issue will easily recognize the differences that exist between it and the two volumes of the work of to-day. This new edition has been the object of an entire revision, and, as the publishers remark in their little notice, all the chapters have been changed and the original text can scarcely be found in the new pages. Science has made great progress since the first edition, and the authors are too hard workers and investigators not to follow them, to contribute to them and record them. Numerous new subjects have then been introduced in the third edition, and much space is given to the pasteurellosis of horses, typhus of dog, pasteurellosis of calves, equine and aviary pest, pseudo-tuberculosis, actinobacillosis (to which I made allusion in one of my last chronicles). And, then, again, the diseases due to hæmatozoa have also found space in the new edition, the piroplasmoses and the trypanosomes. Yet, the general character and arrangement of the book have remained about the same. "The authors," say the publishers, "have this time again given us a complete synthetic and documented study of animal infections, treated altogether to the point of view of clinic, of etiology, experimental study and prophylaxy." There is no doubt that an enormous quantity of work of experiments has been going on for the last few years, and in "Microbian Diseases" Profs. Nocard and Leclainche have resumed all that has been done, studied and discovered to this date. The work is concisely written, relieved of many technical points of laboratory investigations, and constitutes a valuable addition to French veterinary and scientific literature. We hope to be able at an early day to say something more in relation to the parts of the book

which treat of the pasteurelloses, the piroplasmoses and the trypanosomes.

A. L.

### THE CAMPAIGN AGAINST FOOT-AND-MOUTH DISEASE.

The work of eradicating this newly-imported disease from American soil is progressing with much energy and with satisfactory results. In its January number the REVIEW outlined the methods adopted by the Bureau of Animal Industry by republishing its instructions to its inspectors, as well as a circular issued to the public. At the same time we were enabled, through the kindness of Dr. Salmon, Chief of the Bureau, to present our readers with his estimate of the situation, together with some remarks upon the probable origin of the outbreak. While we have received many news items and letters from correspondents as to the progress of the work, we have preferred to ask Dr. Salmon to furnish the account of the work being done, with any impressions of the subject which he might be pleased to present to the profession through the REVIEW. He has replied to our request in a very full and interesting manner, and we subjoin his letter in full:

U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF ANIMAL INDUSTRY,  
NO. 147 MILK STREET, BOSTON, MASS., Jan. 22, 1903. }

*Editors American Veterinary Review:*

DEAR SIRs:—The work of eradicating foot-and-mouth disease in the New England States by the slaughter of diseased animals and disinfection of the premises has progressed very satisfactorily, although not quite as rapidly as was anticipated. All diseased animals in Vermont have been killed and the carcasses disposed of, and all the premises there have been disinfected. In New Hampshire the same is true. In Rhode Island all diseased animals have been killed and about half of the infected premises have been disinfected. In none of these three States has there been any newly infected herd discovered in the last thirty days.

In Massachusetts the condition is not so favorable. The contagion was much more widely spread; there has been a foolish opposition on the part of some of the people, including a few veterinarians; the work

of the Federal Government has been embarrassed and hindered, and new herds are still becoming infected. It appears, however, that in by far the greater part of the infected district there has been no recurrence of the disease since we finished killing the first infected herds. In one section of the State, however, new herds have continued to become infected. We killed a very fine newly-infected herd last Saturday, January 17, which consisted of 109 animals, and we have another herd reported to-day. I think we shall soon be able to stamp out the contagion, but whether there will be any recurrences of the infection after new herds are taken upon the infected premises we will not know definitely until Spring.

The following table shows the number of herds and the number of animals purchased and slaughtered by the United States Department of Agriculture in the several infected States, up to date :

<i>State</i>	<i>Herds</i>	<i>Cattle</i>	<i>Swine</i>	<i>Sheep and Goats</i>
Massachusetts . . . . .	111	2,283	202	47
Vermont . . . . .	14	335	54	74
Rhode Island . . . . .	4	75	8	—
New Hampshire . . . . .	4	37	—	—
Total . . . . .	133	2,730	264	121

In addition to the animals covered by the table there were in Massachusetts 30 other herds, containing 403 cattle, and in Rhode Island 13 other herds, containing 292 cattle, which had the disease but which were supposed to have entirely recovered from it before we were prepared to slaughter them. The total number of diseased herds from the beginning of the outbreak to the present time, so far as known, is therefore, 176, containing 3,425 cattle.

Disinfection is proceeding as rapidly as possible in Massachusetts, but it will be some time yet before all the premises can be treated, as it is comparatively slow work.

We expect to succeed in stamping out this outbreak, and feel that the most serious danger is now past. If we had the cordial coöperation of every one in the State, as we should have, we should feel that the country at large would have little to fear from now on. But as it is, I feel that one could easily make the mistake of being overconfident.

Very respectfully,

D. E. SALMON, *Chief of Bureau.*

### "NON NOBIS SOLUM."

State pride is always an admirable and a commendable feature of journalism, whether representing the domain of the daily

newspaper or a scientific specialty publication; but when it assumes such proportions that all things lacking the ear marks of that particular commonwealth are so far below the "standard" that they "really don't amount to much," the effect becomes ludicrous. Our friend who edits the *Journal of Comparative Medicine* takes a pardonable and just pride in the profession of the Keystone State, and with good reason, for no State in this Union has more devoted and progressive veterinarians, no better veterinary associations, none with better laws, nor laws that are more rigidly enforced. All this is conceded with pride and pleasure. But our friend seems to overlook the fact that there are other States in this glorious Union, and that in some of these there are men engaged in the pursuit of veterinary knowledge who are just as earnest, just as self-sacrificing, and possessing just as deep sulci in their cerebrums as though they did not dwell outside of the favored boundaries of the State which has the privilege of claiming the *Journal* as its own. The Empire State, which has always stood in the front rank when opportunity offered for the advancement of our science and our art, seems to be the red flag for the Philadelphia bull, for scarcely a number of that publication makes its tardy appearance, which does not contain some sarcastic reference to the profession of New York, particularly its State society and its statute laws. The issue for November is a fair sample: It contains two editorial articles—one glorifying the accomplishments of Pennsylvania veterinarians (which we are glad to reëcho), the other castigating those of New York State for errors of omission and of commission. We imagine that the only veterinary thing in the latter State which it will acknowledge to be better than that of Pennsylvania is its monthly periodical, and as it still carries at its masthead the stereotyped legend "Leads Veterinary Journalism in America," it may even fail to concede that much to the Excelsior State. If, however, the status of the profession here is to be gauged by this kind of reasoning, it can have no fault to find with the entire proposition. The *Journal* should not be taken seriously. It is doing itself an injustice, and we are un-



willing that the profession should judge it in this narrow false light. Its editor's record is too full of glorious accomplishments to be dimmed by such pessimisms.

THE GRAND RAPIDS VETERINARY COLLEGE has this month made a slight change in its advertisement on page 16 of the advertising department of the REVIEW. The slight alteration consists in the addition of one single line, which reads as follows: "*Governed by the rules of the A. V. M. A.*" That is a change which is more welcome than any which it could have made, and one which will be of much benefit to all concerned—the profession, the college, and the country. Next!

MINNESOTA HOG CHOLERA CRUSADE.—The Veterinary Department of the State Board of Health will enforce the laws requiring all cases of hog cholera to be reported, all dead animals buried, and forbidding farmers to allow animals infected with contagious diseases to run at large. A farmer in the southern part of the State was prosecuted this week on the three charges and fined. The fine for failure to report the presence of hog cholera is from \$25 to \$100, for failing to bury hogs which die of cholera, \$10 to \$100, and for allowing infected animals to run at large, \$10 to \$100.—(*Pioneer Press, St. Paul.*)

VERATRUM VERIDE IN PNEUMONIA.—The fundamental law of action and reaction is often responsible for the revival of abandoned methods and remedies. Thus the time seems to have arrived (*Merck's Arch.*) for veratrum veride to participate in a resurrection. Its therapeutic value in toxæmic conditions has lately been brought to our notice by Dr. Isham. Now Dr. R. C. Atkinson speaks with conviction of its efficacy in pneumonia. He has used it for a period of many years and found it a superior remedy. Under its administration the distressing symptoms of pneumonia, such as cough and pain, are greatly relieved, the pulse softened and slowed, and the period of illness much shortened. No untoward effects on the heart were observed by the author. The preparation employed was Norwood's tincture. I have used the fluid extract of veratrum veride for several years in the treatment of equine pneumonia and have always found it to be of much assistance in the early stages of the disease.—(*W. J. Martin.*)



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ORIGINAL ARTICLES

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## HUMAN AND BOVINE TUBERCULOSIS.

RESULTS OF THE EXPERIMENTS MADE TO COMPARE THE EFFECTS OF TUBERCULOUS BACILLI OF BOVINE AND HUMAN ORIGIN ADMINISTERED BY THE DIGESTIVE CANAL TO MONKEYS.

CONFERENCE MADE BEFORE THE SOCIÉTÉ DE MÉDECINE VÉTÉRINAIRE PRATIQUE, BY E. NOCARD, OF ALFORT.\*

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At the meeting of April 9th, 1902, the Société of Médecine Vétérinaire Pratique decided to have a new series of experiments on monkeys, to compare the effects of the ingestion of tuberculous products obtained from man and from bovines.

I have the honor to present you with the results:

April 14 I received from Anvers, where they had arrived on the 8th inst., six monkeys of the same breed (*macacus rhesus*) and about the same weight.

These monkeys were placed two by two in three large metallic cages, numbered and kept in separated rooms.

Those of cage III (Nos. 12 and 13) were drawn and designated to serve as witnesses; those of cage I (Nos. 8 and 9) were to partake of the human tuberculous food; those of cage II (Nos. 10 and 11) to have the bovine.

The experiment was begun on Saturday, April 19, consisting in giving every week to each monkey of cages I and II, an even quantity of tuberculous bacilli, human for cage I, bovine for cage II, mixed with their prepared food—cooked rice in sugared boiled milk.

Each monkey of the experiment made in this way 10 infecting meals; in the four first meals, there were for each monkey five centigrammes of bacilli taken from a culture on glycerinated potato; in the last six meals, the dose of bacilli was raised to 10 centigrammes.

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\* Translated from the *Presse Vétérinaire*, by A. LIAUTARD, M. D., V. M.

The bovine culture was similar to that used in the preceding experiments ; \* it was obtained in 1896 from direct inoculation of the pulp of a tuberculous udder, and kept up since in artificial media.

The human bacilli came from sputa inoculated to a guinea-pig on May 24, 1901 ; the spleen of this animal, inoculated June 20 on glycerinated potato, gave a culture which has been since kept up in liquid and solid media. This culture is very virulent to guinea-pigs and rabbits ; inoculated through veins in weak dilution, it has quickly killed sheep, goats and young pigs. Calves and cows inoculated with the same solution, either in veins or in the udder, have resisted.

#### RESULTS.

April 29, one of the witnesses (No. 12) is found dead ; he had diarrhœa since a few days, and had shown violent colics the day before.

At post-mortem, the animal is found entirely free from tuberculosis. All the viscera, lungs, liver, spleen, lymphatic glands, are perfectly healthy. The large intestine is studded with nodosities, dark in color, a little smaller than a hempseed ; by squeezing them a little greenish, thick and sticky pus oozes out on the surface of the mucous membrane, in which by microscopic examination, under low power, a sclerostoma is detected, belonging to a species which has not been made out. It is probable that these parasitic lesions are not stranger to the diarrhœa which preceded death.

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May 15, one of the monkeys of cage II (No. 10), bovine tuberculosis, is found dead. For the last two days he looked sick and had a little diarrhœa.

Post-mortem showed that death was due to invagination of the small intestine. In this monkey also there was on a level with the cæcum and colon a great number of greyish nodosities, surrounding the whole thickness of the canal, opening on the

\* See AMERICAN VETERINARY REVIEW, Vol. XXV, pages 251, 318, 419.

surface of the mucous membrane and each containing a sclerosome. A few similar nodosities existed in the thickness of the omentum. This monkey had had four infecting meals, and had received in each five centigrammes of bovine bacilli. It was interesting to know if he had already tuberculous lesions. The lungs, liver, spleen, and mesenteric ganglions were entirely normal; in the whole length of the intestine, cut open, the mucous membrane was found in places thickened and congested, specially near the cæcum and colon; but histological examination of Peyer's patches failed to show any tuberculous edification; I found no traces of bacilli.

The negative result of this autopsy was not surprising; the experiment was not sufficiently advanced. However, I thought wise to double up the dose of bacilli to be given to the surviving monkeys. From this day to the end of June, each monkey of cages I and II, eat, every week, 10 centigrammes of bacilli.

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Up to July 1st, it was impossible to notice the slightest difference in the general condition of the three monkeys experimented upon. Their weight, taken every week, increased regularly. From July 15, the monkey which was submitted to the *régime* of bovine bacilli (No. 11) began to lose flesh. From 2 kilo 130 gr. its weight had gradually gone up, in such a manner that on July 1st it had reached 2 kilo 760 gr. From that date it went down, little by little, and the day of its death, September 21, this monkey only weighed 2 kilo, .070 gram.; in two months he had lost 690 gram., more than a quarter of his weight.

Towards the end of August, this monkey had become dull, remaining buried in the hay of his litter, eating with less avidity, coughing frequently; the belly appeared bigger; the face looked paler and the eyebrows were a little œdematous.

All these symptoms increased rapidly and death occurred on September 21.

I made the autopsy on the 23d; the cadaver had been kept in the freezing box.

At the opening of the abdominal cavity, slight ascites is noticed; there is no tuberculous peritonitis; but there is an enormous mesenteric tuberculosis; all the glands are hypertrophied, of puffy consistency, semi-fluctuating, specially those of the sublumbar region. The liver seems sound; spleen is hypertrophied and has a few miliary nodules; there are also a few in the cortical layer of the two kidneys. The lungs are the seat of extensive lesions; the inferior lobes seem solidified in mass, except on the borders; they are firm, dense, compact, white-greyish in color; but at no point do they show centres of softening; on the periphery, where the tissue of the lung is still permeable, and also in the superior lobe, the tissue is infiltrated with a large number of very fine greyish or translucent nodules, of recent formation. The bronchial glands are hypertrophied, in process of caseification. There are some tuberculous patches on the costal pleura and on the superior face of the diaphragm. Open its whole length, the intestine shows thickness, induration, and here and there ulceration of Peyer's patches and of the blind follicles.

To resume, we find here again all the identical lesions that we have already seen in the preceding experiments; here they are perhaps still more marked.

\* \* \*

The same day, September 23, I have shown you the two monkeys which were following the *régime* of human tuberculous bacilli. They had all the signs of health; were fat, gay and strong; they kept up increasing in weight.

One of them (No. 8) was killed and post-mortem made. The cadaver was very fat. On opening the abdomen, there is a mesenteric tuberculosis, entirely analogous to that of the preceding, but much less accused; you can judge by the comparative examination of the specimens which have been kept in formol. All the glands of the concave border of the intestine or of the sublumbar arch are swollen and caseous in their centre. Nothing in the liver or kidneys; fine miliary appearance of the

spleen ; few small caseous centres in the lungs ; intestinal mucous membrane appears normal.

It is certain that the monkey could have still lived a long time.

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At any rate, you can see that its mate (No. 9) is still strong and gay. He has kept increasing in weight since October 15. It was the smallest of the three at the beginning of the experiment, weighing then 1850 grams. ; its weight went up to 2 kilo. 840 gr. ; but since a month he has lost 400 grams. We shall make its post-mortem now. . . . . The opening of the abdominal cavity brings in evidence a mesenteric tuberculosis entirely similar to that of the monkey No. 8, but still less advanced. The glands of the concave border of the intestine, those specially of the sublumbar arch, are all enlarged, indurated and caseous in the centre.

The small intestine shows in some points thickenings, on a level with which the walls seem thickened and indurated ; slitting it open, a diffused tuberculous infiltration is observed on the surface of the mucous membrane. The muscular and serous coats are involved in the lesion ; in some points the omentum adheres to the intestine and is difficult to separate. The spleen shows a small number of miliary centres ; there are a few also in the pulmonary lobes. The liver and kidneys are free.

We will now kill the last witness (No. 13). He is in good condition ; his coat is glossy ; the animal is gay, playful, strong and very shy. . . . .

You see that there is not the slightest tuberculous lesions. On the surface of the small intestine and in the thickness of the omentum, a few nodules of sclerostomes are found. They are identical to those of monkeys 10 and 12. Except that, all the organs are sound.

#### SUMMING UP AND CONCLUSIONS.

(A) Out of the six monkeys submitted to the experiment, two did not take any tuberculous product in their digestive tract ; another died accidentally less than a month after the beginning

of the experiment. Those three monkeys had absolutely not one tuberculous lesion. It can therefore be admitted that the entire lot used in the experiment were free from tuberculosis, and that the lesions found at the autopsies of the other three monkeys were certainly due to the ingestion of the tuberculous matters given to them. Besides, the localization of the lesions shows evidently that the intestinal mucous membrane has been the door of entrance for the virus.

(B) According to our previsions, tuberculosis of bovine origin has shown itself much more virulent than that of human source; it has killed monkey No. 11 in five months, leaving in him lesions without comparison more extensive than those of the two monkeys which followed the *régime* of human tuberculosis.

The monkey No. 11 was dwindling away, since more than two months; since July 1st he had lost 700 grammes, more than one quarter of his weight.

Monkeys 8 and 9, which took the same weights of human bacilli, had lesions of the same order as those of No. 11, but much less severe. Both of these monkeys could have lived a long time; when No. 8 was killed, two days after the death of No. 11, he was stronger and weighed more than at the beginning of the experiment. No. 9, that we have just looked at, kept up increasing in weight, up to October 15th, and its lesions, still less serious than its mate, would have allowed him yet a long life.

(C) If we bring the results of this series of experiments with those of the first, the following conclusions impose themselves:

(1) Monkeys (*cercopithecus callithrix* and *macacus rhesus*) are as sensitive as other mammalia to the effects of the tuberculous bacilli of bovine origin.

(2) It suffices to make them take with their liquid or solid food small quantities of culture of this bacillus, to give them an abdominal tuberculosis fatal in a few months.

(3) Anyhow, all conditions being even, bovine bacillus administered to monkeys through the digestive tract, proves itself



much more virulent and kills much more rapidly than human bacillus.\*

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Then, monkeys can become tuberculous, just as other mammalia, by feeding with tuberculous products of bovine origin. It would be absurd to suppose that man alone can be the only exception to the rule.

Moreover, since the Congress of London, there has been published a certain number of observations of human tuberculosis, whose products, inoculated to healthy calves, following the recommendations of Koch, have given them a tuberculosis identical to the natural disease and more or less rapidly fatal.

If one admits the formula of Koch, that bovine can become tuberculous only by the inoculation of its own bacillus, it must also be admitted—*patere legem quam fecisti*—that in all those cases, the diseased men had tuberculosis of bovine origin.

We must then maintain in reinforcing them all the sanitary prescriptions which permit the suppression of cows affected with tuberculous mammitis—that is to say, those which are far the most dangerous for public health. It is that which I endeavored to demonstrate at the International Conference which has just been held in Berlin, in a communication in which I drew the following conclusions :

“ . . . The danger of the milk of cows affected with tuberculous mammitis being thus well established, it necessarily follows that public powers have the imposing duty to take the necessary measures to remove those cows from the barns where milk is produced for public consummation. Already, in numerous countries, legislation orders the slaughtering of those animals. In France, the rural code stipulates that *in case of tuberculosis well proved, the animal is killed by order of the mayor*, and the ministerial order of October 31, 1898, states that *by tuberculosis well proved, must be understood that which*

\* This however refers only to the two cultures experimented comparatively ; I do not doubt that types of human bacilli can be found, which may be more virulent than some types of bovine bacillus ; but, very generally, bovine bacillus shows itself, by all methods of inoculation and for all mammalia notably more virulent than human bacillus.

*is manifested by some of the clinical signs of the disease ; tuberculosis of the udder is one of those signs which when present carries the verdict of slaughtering of the animal. If, thus, the rural code was well applied, we would in France be protected against the serious dangers to which public health is exposed by the use as food of tuberculous milk.*

"The mayors of towns are the ones to order the slaughter of cows affected with tuberculous mammitis ; but to do so, they must first know them, and this they cannot unless informed by the owners of the animals ; but these do not give the information only when the cows do not give any more milk—that is, when they are no longer dangerous.

"What takes place in France must also exist, more or less, in other countries.

"Dangerous cows will not be eliminated from the barns of their owners unless these barns are submitted to periodical inspection. Veterinary inspectors ought to visit them monthly or every two months ; they would isolate all cows presenting suspicious symptoms and specially those with mammitis ; while waiting for the diagnosis, which can be made easily and quickly with the means now known, their milk should be boiled or pasteurized before being sold or used, even for the animals of the place. The dairyman shall be obliged to notify immediately the inspector of all cases of mammitis occurring between two inspections. As soon as the diagnosis shall be established, the inspector shall notify the local authority, who will act according to the law.

"While waiting for the execution of this measure, which may be long to come, one must repeat to the public that the *surest* means to guard against the danger, consists *in boiling the milk before using.*"

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Before closing, allow me to tell you of another experiment which is closely related to those which we have just finished and which will be somewhat their epilogue.

The first monkey that I killed by feeding with bovine tuber-

culous products was an old macaque, strong and ugly, the last survivor of a lot of four monkeys that I had in 1897, and three of which, killed previously, had been free from tuberculosis. This monkey, at three different times had eaten a potato which had been used to make a culture of bacilli of bovine origin and which had been first scraped to remove the greatest part of the culture. The first infecting meal took place September 28, 1901, the others on October 11th and November 2d. The animal died cachectic December 22d, less than three months after the beginning of the experiment. The post-mortem revealed an extensive tuberculosis of all the mesenteric glands and specially of the sublumbar, which form, as you see, a white mass, bosselated as big as a hen's egg. The spleen and liver contain numerous small tuberculous centres. The two lobes of the lung present several large centres and a large number of fine miliary nodules, grey and translucent. From the biggest sublumbar glands, I took purely a pipette of caseous pus, extremely thick and very rich with bacilli; after dilution in four volumes of boiled water, I inoculated two guinea-pigs in the peritoneum, and a healthy milch cow (No. 10, left horn) by injection in a teat of the left anterior mamma.

The guinea-pigs died tuberculous January 11 and 20, 1902.

During three months, no apparent change could be observed in the mammæ nor in the secreted milk. Then, as the milk secretion diminished, a difference in the size and consistency was noticed between the inoculated gland and the others; while those were getting depressed in assuming a greater suppleness, the other kept its dimensions and its firmness, still without giving any more milk than the others; then, little by little, it increased in size and consistency, and by June 6, 1901, it had assumed all the characters of a severe mammary sclerosis.

At that time, a small quantity of serous, whitish liquid could be obtained, which, after turbinage, gave a deposit, rich in bacilli of Koch; a small piece of the indurated gland obtained by harpooning with fine trocar, gave by-preparations where the bacilli of Koch were very numerous. Finally, a second healthy

milch cow, inoculated in the teat of the udder, with five cubic centimeters of the serous fluid obtained from the first, took a specific mammitis, which developed much more rapidly than the first. To-day she is much sicker than the other ever was.

I had the first cow killed so as to show it to you. You see that she is in very good condition of fat and that all the viscerae are free from tuberculosis. The lesion is entirely limited to the udder, its lymphatic glands and the two nearest prepelvic glands.

This experiment has a double interest :

I have shown that the injection, in the udder of a cow in lactation, with a small quantity of bovine tuberculosis, gives rise to an acute tuberculous mammitis, which may kill rapidly by a true tuberculous intoxication.

But the experiment repeated in the same conditions, with culture of human tuberculosis (when this culture remains inactive in intravenous injection) gave only negative results.

The fact that the tuberculous products of my monkey have given to the cow a tuberculous mammitis shows that the tuberculosis of this monkey was well of bovine origin ; but, on the other side, the slow development of that mammitis, its localization to the infected mammæ and its lymphatic glands, show that the single fact of the passage through the organism of the monkey has deeply modified the initial virulency of the bovine bacillus.\* This is the demonstration of what I said last year at the Congress of London, and that I repeated to Berlin :

"The differences observed between the tuberculous bacilli of the various species are due simply to a gradual adaptation, more or less perfect, to the living media where they are. The bacillus of Koch, to be sure, is one of the microbial forms the best differentiated and the most fixed that we know ; yet as all the other microbes it submits to the influence of the living media where it grows, and the number is illimited of the varieties that may be observed in natural conditions or in those created by experimentation."

\* It must be observed that this so well localized tuberculosis did render the cow as sensitive to tuberculine as other cows affected with pulmonary tuberculosis.

## SOME EXPERIMENTS UPON THE IMMUNIZATION OF CATTLE AGAINST TUBERCULOSIS.\*

BY LEONARD PEARSON, B.S., V.M.D., STATE VETERINARIAN OF PENNSYLVANIA, AND S. H. GILLILAND, V. M. D., ASSISTANT BACTERIOLOGIST OF THE STATE LIVE-STOCK SANITARY BOARD.

*(From the Laboratory of the State Live-Stock Sanitary Board of Pennsylvania.)*

When an extensively tubercular herd is tested with tuberculin one usually finds some animals that do not react to the test and are free from disease. These uninfected animals may be young or they may be recent additions to the herd, and their freedom from disease may be due merely to the fact that they have not had time to contract it; on the other hand, they are often cows that have been members of the herd and exposed to infection for years. That the freedom of these cattle that have long resisted the disease is not due to breed or family immunity has, in numerous instances, been shown by the fact that their parents or offspring have succumbed to tuberculosis.

To what is such resistance to tuberculosis due? It is evident that it does not depend upon species, breed, or lack of exposure. It is an individual factor. An animal may possess some power within itself to resist the tubercle bacilli that it is constantly exposed to and must daily inhale and ingest.

Careful observation of these cattle and study of them in series show that the immunity they possess is not due to what is roughly termed good general health or what the stockman knows as good condition. Cattle resistant to tuberculosis may suffer with some other disease or be in a bad state of nutrition. Cattle that contract tuberculosis show, in very many instances, until the infection is well advanced, the usual signs of good health, such as soft coat, pliable skin, clear eyes, good appetite, and regular growth or increase of weight or yield of milk in proportion to the quantity and quality of food consumed. It appears, then, that there is reason to believe that some cattle have a specific resistance to tuberculosis. We know that spe-

\* Read before the Pathological Society of Philadelphia, November 13, 1902.



cific resistance or immunity of the individual, occurring under natural conditions, usually depends on a previous attack of the disease against which the animal is immune, or, as in the case of Texas fever, upon the continued existence of the disease in a form so mild as not to appreciably disturb the various functions. This principle receives practical application when persons are rendered immune to smallpox or animals to anthrax, black-quarter, lung plague, rabies, or Texas fever by inoculating them with the attenuated but living virus of the respective disease, and thus causing them to develop it in a comparatively mild form, from which speedy recovery and subsequent immunity are almost certain.

From the inoculation there results the automatic development of an antitoxin that counteracts the toxin of the disease, and, at the same time, prevents or retards the growth of the organism of that disease. Until comparatively recently this principle has been thought to hold only in respect to certain acute infectious diseases, but it is now known to be of much wider application. Protection upon this principle is usually known as vaccination. In some cases the germ-free toxin is used for a similar purpose.

In 1901 we conducted an experiment for the purpose of determining the influence of Koch's original tuberculin upon the resistance of cattle to tuberculosis. In this experiment were used four cows known by the numbers 26554, 26555, 26556, and 26557. Each was tested with tuberculin before it was admitted into the experiment. Two of these cows, 26554 and 26557, were given daily injections of 5 c.c. of concentrated tuberculin for ten days, from August 24 to September 2, 1901, inclusive. Each of the four cows in the experiment was fed daily 100 grammes of hacked tuberculous lung tissue from a cow, for ten days, from the 10th to the 19th of September, inclusive. The first pair of cows, 26554 and 26557, that had received preliminary injections of tuberculin were given subcutaneously 15 c.c. of concentrated tuberculin each day during the progress of the feeding upon tuberculous material. The



other two cows 26555 and 26556, which had not received the daily preliminary injections of tuberculin, received no tuberculin during the experiment.

One of the cows (26554) that had been treated with tuberculin, and one (26555) that had not been treated with tuberculin were killed November 25, 1901. The cow (26554) that had been treated with tuberculin showed upon post-mortem examination lesions of tuberculosis in the post-pharyngeal and mesenteric lymphatic glands. The control cow (26555) showed lesions of tuberculosis in the right lung and in the bronchial and mediastinal lymphatic glands, the post-pharyngeal and intermaxillary lymphatic glands and in the mesenteric lymphatic glands. The lesions in this control cow were more widely distributed and more advanced than in the cow that had received large quantities of tuberculin.

The other two cows of the experiment were killed December 16, 1901. In the first of these (26557) which had received the injections of tuberculin, no lesions of tuberculosis were found excepting in the mesenteric lymphatic glands. A few of these glands of both the small and large intestine showed small areas of caseation. The second control cow (26556) showed lesions of tuberculosis in both lungs, the bronchial, mediastinal and post-pharyngeal glands; and the lymphatic glands of the mesentery were more extensively involved than in the preceding cow.

From this it would appear that subcutaneous injections of the toxin of the tubercle bacillus had had some influence in increasing the resistance of these two cows to feeding tuberculosis.

E. A. de Schweinitz reported in the *Medical News* for December 8, 1894, some experiments made by him upon guinea-pigs, in which these animals were inoculated with tubercle bacilli of human origin cultivated for about twenty generations upon glycerin beef broth, and were afterward inoculated with tuberculous material from a cow. The guinea-pigs so treated remained free from tuberculosis, while check animals inoculated with the same tuberculous material from the cow died of tuber-

culosis within seven weeks. De Schweinitz also showed that the twentieth generation of broth culture appeared to be incapable of producing tuberculosis in a cow when she was inoculated intravenously with a small quantity. De Schweinitz and Schroeder report (U. S. Dept. of Agr., *B. A. I. Bulletin*, No. 13, 1896) upon other inoculations similar in nature and confirmatory of the above results. They show, further, that the attenuated culture they were working with was not virulent for cattle when inoculated intravenously in quantities of 500 c.c. of suspension in liquid.

The immunizing effect upon cattle of the administration intravenously of tuberculous material or of living cultures has been studied by J. McFadyean and by von Behring.

McFadyean reported in the *Journal of Comparative Pathology and Therapeutics* for June, 1901, and March, 1902, upon some experiments regarding the immunization of cattle against tuberculosis. He inoculated four cattle intravenously with emulsions of tuberculous material and cultures from various sources. One of these cattle, which had responded to the tuberculin test, and was, no doubt, tubercular upon the beginning of the experiment, was given about 150 c.c. of tuberculin in divided doses before inoculation. Fifteen weeks after inoculation this animal was killed and was found to contain but one tubercle, the size of a pea and completely calcified, in a mesenteric gland. Two control cattle inoculated with an equal dose of the same material died of generalized tuberculosis. Of the other three cattle of the series one was tubercular at the beginning of the experiment. All of these were inoculated intravenously from seven to eleven times during a period of from two to three years with emulsions of tuberculous materials and with cultures from various sources. It is interesting to note that the first inoculation upon each of the cows that was free from tuberculosis at the beginning of the experiment was made with avian material which was probably of very low virulence for cattle. The cattle so inoculated died of tuberculosis after two to three years from the beginning of the experiment, and in each case the

chief lesions were in the kidneys and the brain or its covering membranes. The cerebral lesion appears to have been the immediate cause of death in each instance. There can be no doubt that these animals were remarkably resistant to tuberculosis, because they lived for months or years after repeated inoculations with large quantities of material of proven virulence for cattle.

Von Behring announced December 12, 1901, that he was engaged in studying the immunization of cattle against tuberculosis, and he has since published a report (*Beiträge zur Experimentellen Therapie*, Heft, 5, 1902) upon his work. He details experiments upon several cattle treated with injections of tuberculin and with cultures of varying degrees of virulence and from several sources, and also inoculated with tuberculous material or cultures of proven virulence. It may be noted that a pure culture virulent for cattle was not available for use in von Behring's work until 1901. The experiments upon seven cows specially reported were commenced between July and December, 1901. These cows have all received repeated injections of tuberculin and of tubercle virus of low and high virulence. All of the protected cows are still alive excepting one that was killed and was found to have numerous tubercular nodules in the lungs, although these were believed to be retrogressive. This general experiment cannot be looked upon as finished, and any report upon it must be regarded as incomplete until the cows die or are killed and are examined post-mortem. The cows may appear to be in good health now, but, notwithstanding, they may be extensively tubercular. However, that they are alive after receiving quantities of virulent tuberculous material that are sufficient to kill untreated cows shows that they have extraordinary resistance to tuberculosis. The method used to treat these cows was not systematic nor the one that he now recommends upon the evidence of experiments not yet published. The method now recommended by him is to inject intravenously 0.001 gramme of a scraping from a serum culture of tubercle bacilli dried in vacuum, powdered, and suspended in water.

The culture used for this purpose was obtained originally from human sputum and has been grown in his laboratory since 1895. After four weeks a second injection is made containing twenty-five times the original quantity of tubercle bacilli, or 0.025 gramme. Von Behring has now underway extensive experiments planned to test the resistance of immunized calves to natural infection from association with infected animals in contaminated premises.

Since 1896 tuberculosis of cattle has been the subject of special and extensive study and experimentation in the laboratory and research station of the Pennsylvania State Live-stock Sanitary Board. During this time the virulence for cattle and other animals of tubercle culture and material from many sources have been tested by Dr. M. P. Ravenel, Dr. John J. Repp, and ourselves. The results of some of this work have been reported upon several occasions to this Society by Dr. Ravenel and to the British Congress on Tuberculosis in 1901. Some experiments looking toward the development of better methods for repressing tuberculosis in herds have been reported by Dr. Leonard Pearson.

It has been shown by numerous experiments that the sputum of persons suffering from consumption and cultures of tubercle bacilli made from such sputum are usually comparatively non-virulent for cattle. It is important to know, further, that a given culture of sputum tubercle bacilli is incapable of producing serious disease in such quantities as it may be necessary to use in an attempt to increase an animal's resistance to tuberculosis.

The following experiment throws light upon the question as to the quantity of culture of this kind that may be administered and the effect of repeated inoculations made in four different ways. A Jersey heifer (26415) shown by tuberculin test to be free from tuberculosis was inoculated intraperitoneally September 29, 1900, with 4 c.c. of a standard suspension\* of human

\* By a standard suspension is here meant a suspension of tubercle bacilli in water in such quantity as to give an opacity equal to that of a twenty-four-hour culture of typhoid

sputum culture that had remained in a collodion capsule in the abdominal cavity of a bull for seven months, and was then regained in pure culture by Dr. Ravenel. The third generation on blood serum furnished the material for this inoculation. The heifer was inoculated intravenously March 15, 1901, with 13.5 c.c. of a standard suspension of tubercle bacilli, probably of human origin, that had passed through a coati (*Nasua narica*), and were recovered in pure culture by Dr. Theobald Smith in 1895. This culture had afterward remained about one year in a collodion capsule in the peritoneal cavity of a heifer, had been recovered by Dr. Ravenel, and the third generation on blood serum after recovery supplied the material for the present inoculation. A second intravenous inoculation with 10 c.c. of similar suspension was made June 1, 1901. August 23, 1901, this heifer was inoculated with 20 c.c. of a standard suspension in water of a culture (H) of tubercle bacilli from human sputum. This quantity of material was divided into four parts of 5 c.c. each, and these parts were injected beneath the skin, into the peritoneal cavity, into the jugular vein, and into the lung, respectively. These injections were repeated at intervals of from seven to ten days until January 29, 1902. The quantity of standard suspension was increased 10 c.c. with each successive inoculation, so that at the last, the eighteenth, inoculation the total quantity given was 160 c.c. The total quantity given in this series of inoculations was 1797 c.c. of standard suspension. There was a rise of temperature of from two to four degrees following each inoculation after the first one. The first inoculation caused no temperature reaction. The heifer was in strong, thrifty condition at the completion of the series of inoculations, and improved in condition throughout the following months. It was killed August 14, 1902. The condition was good, and there was an abundance of fat upon the carcass and about the intestines. The post-mortem examination revealed the lungs to

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bacilli in bouillon. 1 c.c. of such a suspension is estimated to contain the equivalent of 0.0013 gramme of tubercle bacilli after drying ten days in a desiccating chamber over calcium chloride.



be normal in color and elastic ; they were free from nodules, but were attached to the chest walls along the lower borders by fibrous bands. A few flakes of fibrin were found upon the omentum, and these flakes contained a few calcareous nodules about one-twelfth of an inch in diameter. The liver was adherent to the diaphragm over an area five inches in diameter.

A yearling grade short-horn bull (26442) after having been tested with tuberculin and proven to be free from tuberculosis, was inoculated intraperitoneally November 19, 1900, with 16 c.c. of a suspension of tubercle bacilli from a culture from human sputum that had remained in a collodion capsule in the peritoneal cavity of a bull for seven months. The third generation on blood serum after recovery furnished the material for this inoculation. March 17, 1901, this bull was inoculated intravenously with 13.5 c.c. of a standard suspension of a culture similar to that used in the inoculation of the above heifer (26415) on March 15 and June 1, 1901. This animal was subsequently inoculated in the same manner as the heifer, receiving eighteen inoculations between August 23, 1901, and January 10, 1902. He received in all 1710 c.c. of standard suspension. He reacted following the inoculations very much as the heifer, although somewhat more slowly. He remained in good condition and apparent good health until he was killed excepting for the development of an abscess over the jugular vein, which was opened November 22d, and afterward healed nicely. January 18, 1902, this bull was inoculated intraperitoneally with 10 c.c. of a standard suspension of tubercle bacilli from a culture (H) of bovine origin. The virulence of this culture for cattle had been proven by numerous inoculations, among which the following may be mentioned: A cow (26431) weighing 950 pounds was inoculated intravenously January 8, 1901, with 5 c.c. of a standard suspension from a culture of bovine tubercle bacilli H. The cow lost weight rapidly to 750 pounds, and died March 4, 1901. Post-mortem examination revealed most extensive miliary tuberculosis of the lungs. Another cow (26433), weighing 698 pounds, was similarly inoculated at the same time, and died



January 26th of miliary tuberculosis of the lungs. This cow received two injections of tuberculin of 0.4 c.c. each on January 16th and 22d. Both of these cows had been shown to be free from tuberculosis by tuberculin test before they were inoculated. A red heifer (45072), about eight months old, was tested and did not react. It was inoculated intraperitoneally April 30, 1902, with 5 c.c. of standard suspension of bovine culture H. It died June 7, 1902, and was found to contain extensive lesions of tuberculosis upon the peritoneum and abdominal organs, and the lungs, also, were crowded with small tubercles. The bull (26442) was killed August 13, 1902. The general condition was good, and there was much fat upon the carcass and about the internal organs. The pleura lining the lower half of the chest was covered by a sheet of partly organized fibrin from one-eighth to one-third of an inch thick. The lungs themselves contained a few nodules about one-half inch in diameter surrounded by thick walls and containing caseous pus in which there were many tubercle bacilli. These nodules did not seem to be progressive, and appeared to be abscesses indicating the sites of previous inoculations. The peritoneum covering the abdominal walls, the stomach, intestines, spleen, and liver was coated with a layer of partly organized fibrin, as in the chest. The lymphatic glands about the rectum were enlarged and caseous. The surface of the omentum was rough from the presence of a thin layer of partly organized fibrin. The omentum was thickened in places, but there were no distinct nodules. From the fact that the fibrinous coating of the serous membranes was as pronounced in the thoracic as in the abdominal cavity it is probable that the virulent culture of tubercle bacilli injected into the abdomen has little to do with the production of this deposit, which may readily have resulted from the discharge of a pulmonary abscess into the pleural cavity or the discharge into the peritoneal cavity of the purulent contents of one of the softened lymphatic glands in the pelvis.

It is evident that the sputum tubercle bacilli used for the inoculation of these two animals (26415 and 26442), even in

the exceedingly large quantities in which they were employed, were incapable of causing general tubercular infection. Even the intraperitoneal inoculation of the bull with a quantity of virulent culture nearly twice as great as was necessary when similarly administered to kill an unprotected heifer did not, so long as he was permitted to live, appreciably disturb his general health. The human sputum culture M used for these inoculations was obtained by Dr. Ravenel from the sputum of a consumptive woman in September, 1899. As a further indication of its degree of virulence, it may be noted that two guinea-pigs were inoculated, subcutaneously, December 18, 1901, each with 1 c.c. of a standard suspension of this culture. One guinea-pig died March 8th and the other March 20th, of generalized tuberculosis. Two rabbits were also inoculated December 16, 1901, each with 2 c.c. of the same suspension. Both died suddenly in June, one on the 3d and the other on the 10th, from having been given improper food. Both were free from all evidence of tuberculosis and showed no alteration excepting diffuse redness of the intestines.

These experiments tend strongly to show that cattle may be refractory to enormous quantities of tubercle bacilli from human sputum when injected into the blood beneath the skin, into the peritoneal cavity or into the lungs; and the result upon one of the animals (the bull) indicates that after such treatment the resistance to virulent culture of bovine origin may be increased.

An experiment was inaugurated in March of this year, to again, and more definitely, test the immunizing value of repeated intravenous inoculations of cultures of sputum tubercle bacilli not virulent for cattle. For the purpose of this experiment four young cattle were used, as follows: A black and white bull, sixteen months old (46066); a red heifer, twelve months old (45068); a red heifer, fifteen months old (45067), and a red heifer, eleven months old (45071). All were tested with tuberculin and were proven to be free from tuberculosis. They were divided into two groups of two each as nearly equal as possible in respect to age, size, and general condition. The

animals of one group were inoculated intravenously seven times between March 24th and June 2d, with gradually increasing quantities of from 10 c.c. to 25 c.c. of a standard suspension of a culture of sputum tubercle bacilli. In all, 125 c.c. of this suspension were administered, representing about 0.16 gramme of tubercle bacilli.

Each of the four animals in this experiment—the two that had been vaccinated (45066 and 45068) and the two kept as controls (45067 and 45071)—was inoculated July 29th by injecting into the trachea 10 c.c. of a standard suspension of bovine tubercle bacilli (culture H) known to be virulent for cattle. The intratracheal method of inoculation was used, because it furnished a means of conveying tubercle bacilli into the organs most frequently infected in nature and in a manner unattended by disturbance of function or with material traumatism. It seemed to give a mode of infection closely resembling the natural one. One of the vaccinated cattle (45068) was killed October 4th. A searching post-mortem examination revealed all of the organs, including their lymphatic glands and covering membranes, to be free from all evidence of disease, with the exception of a slight fibrous thickening of the wall of the jugular vein at the point of vaccination. At the site of the intratracheal inoculation of July 29th there was no mark, and the mucous membrane lining the trachea was entirely normal.

A control heifer (45071) killed October 8th showed the following upon post-mortem examination: At the point of inoculation, upon the outside of the trachea and beneath the skin, there was a globular abscess about three-quarters of an inch in diameter, containing cheesy pus. The mucous membrane of the trachea showed a number of small, reddish elevations (tubercular) below the point of inoculation. The lungs were studded upon the surface and upon cross section with grayish nodules one-quarter to one-half an inch in diameter, the centres of which were caseous. These tubercles were evenly distributed in both lungs and roughly averaged from one to one and one-half inches apart. They could be plainly seen and felt through the trans-

parent pleura. The apex of the right lung contained a caseous area two inches in diameter, which was made up of many adjacent small tubercles. The bronchial and mediastinal lymphatic glands were enlarged and contained cheesy areas from one-sixteenth to one-third of an inch in diameter. The post-pharyngeal lymphatic glands were enlarged to the size of an egg, hyperæmic, and on section showed numerous caseous areas.

The second vaccinated animal (45066) was killed October 16th. At the two points of insertion of the needle when the animal was inoculated, July 29th, there were two somewhat hard, globular fibrous thickenings one-quarter to three-fifths of an inch in diameter, respectively. Within the trachea, and occupying positions corresponding to these, were two very small (pin-head) grayish elevations in the mucous membrane. Upon section it was found that the upper of these small thickenings was made up of fibrous tissue, the lower (the smaller one) contained a focus of caseous material surrounded by thick, fibrous walls. The whole appearance was that of a closed process. No other lesions were found in any part of the body. All of the organs, their lymphatic glands and covering membranes, appeared to be quite normal. There was no thickening of the wall of the jugular vein at the point of vaccination.

The second control (unvaccinated) heifer (45067) was killed October 16th. The post-mortem report is as follows: Beneath the skin in the middle of the neck, at the point of inoculation, there was an abscess about two inches in diameter that contained cheesy pus. All of the inferior cervical and suprasternal lymphatic glands were enlarged to several times their normal volume and contained numerous areas of caseation. Within the trachea, from the point of inoculation down to its bifurcation, and up to the glottis, the mucous membrane lining the ventral half of the tube was thickly studded with oblong, red, and evidently young and progressive tubercular growths. These formations were from one-sixth to one-half an inch long, and about two-thirds as wide; they stood above the surrounding surface from one-twelfth to one-half an inch. The post-pharyngeal

lymphatic glands were enlarged to the size of a hen's egg and loaded with caseous material. The lungs contained many grayish nodules one-eighth to one-quarter of an inch in diameter. The smaller were grayish throughout, while the larger had yellow, cheesy centres. These nodules were not set so thickly as in the other control heifer (45071). They averaged from four to five inches apart, and were very evenly distributed throughout both lungs. The mediastinal and bronchial lymphatic glands were enlarged to twice their normal size and contained much caseous material. Many (about eighteen) of the lymphatic glands of the mesentery were enlarged and caseous. No alteration could be found in the mucous membrane or the walls of the intestine. The infection of the mucous membrane of the trachea above the point of inoculation appears to have been due to the carriage upward by coughing of some of the tubercle bacilli at the time of inoculation. It is well known that cattle habitually swallow their expectorations, and this may account for the infection of the post-pharyngeal and mesenteric lymphatic glands.

From the experiments here recorded we believe that we are justified in concluding :

1. That after repeated intravenous injections of cultures of tubercle bacilli from human sputum the resistance of young cattle to virulent tubercle bacilli of bovine origin may be increased to such an extent that they are not injured by inoculation with quantities of such cultures that are capable of causing death or extensive infection of cattle not similarly protected.

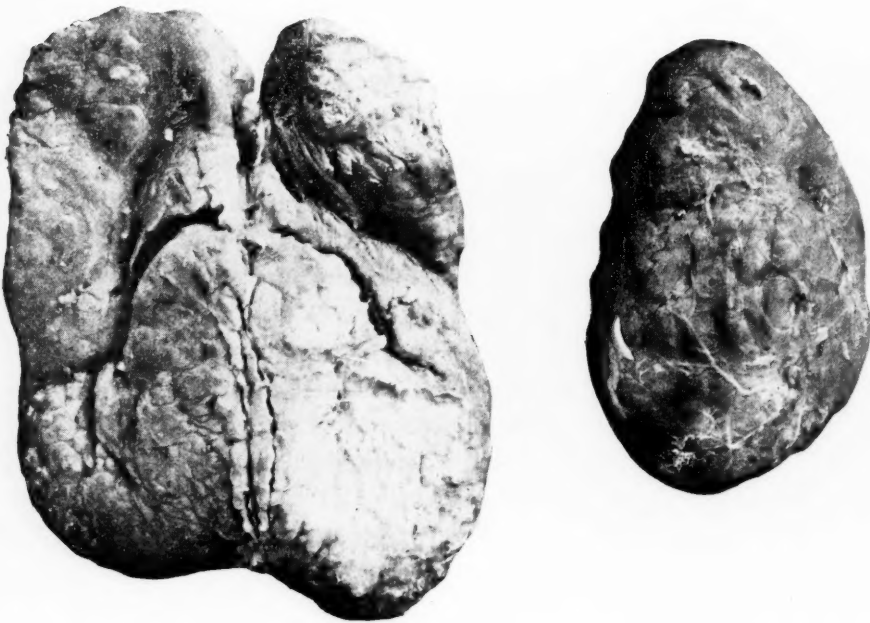
2. That by intravenous injection much larger quantities of culture of human sputum tubercle bacilli than are necessary to confer a high degree of resistance, or immunity, upon the vaccinated animal may be administered without danger to that animal.

We now have in progress uncomplete experiments upon a number of young cattle, some of which have been underway since last March, for the purpose of testing the duration of this immunity and the extent to which it is effective in protecting



cattle against infection from natural sources. We have also started an experiment which we hope will throw light upon the open question as to the minimum quantities of culture of non-virulent tubercle bacilli that it may be necessary to administer in order to confer a serviceable degree of immunity, and, further, whether it may be possible to simplify the process of vaccination by successive injections of a few cultures of progressive degrees of virulence.

In conclusion, we wish to express our thanks to Dr. M. P. Ravenel and to Dr. H. C. Campbell; to the former for the originals of most of the culture used, and to both for general assistance during the progress of the experiments. We also wish to thank the authorities of the Veterinary Hospital and of the Pepper Clinical Laboratory of the University of Pennsylvania, who have generously furnished the State Live-stock Sanitary Board with a laboratory and with other facilities, without which its research work would have been impossible.



Post-pharyngeal lymphatic glands of control heifer No. 45067. Enlarged and caseous.



Upper portion of trachea of control heifer No. 45067. Shows tubercular growths on the mucous membrane.



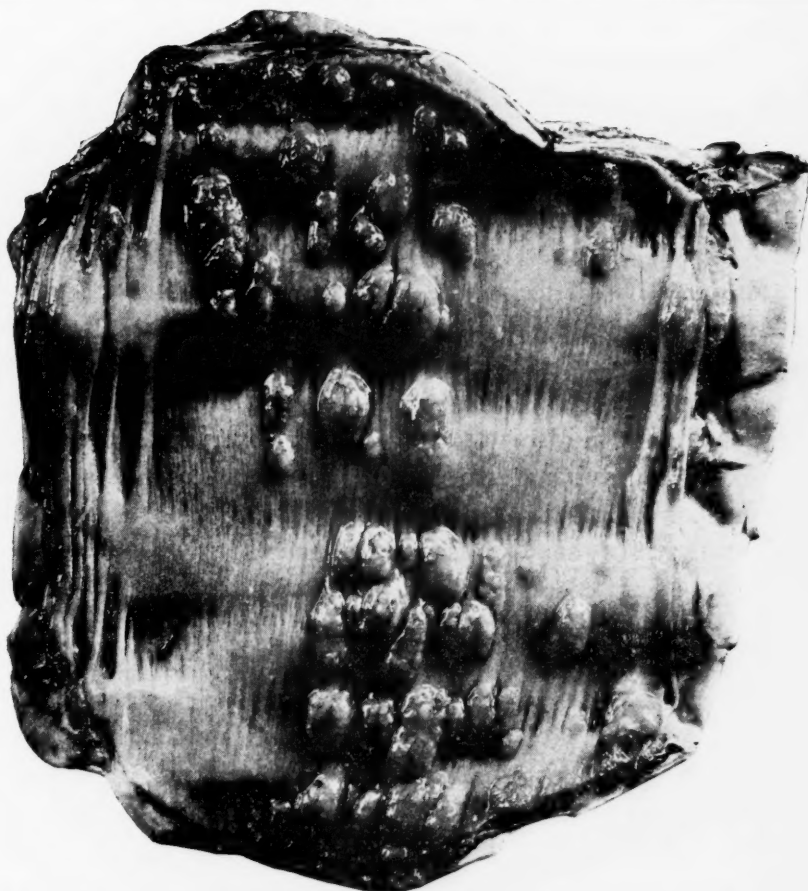
Post-pharyngeal lymphatic glands of vaccinated bull No. 45066. One is bisected. Normal in size and texture.



Cervical, mediastinal, and bronchial glands from control heifer No. 45067. One-half normal size. All are enlarged and caseous.



Mesenteric lymphatic gland from control heifer No. 45067. Enlarged and caseous.



Lower portion of trachea of control heifer No 45067. Shows tubercular growths on the mucous membrane.

**QUININE CAMPHORATE.**—A chemical compound of quinine and camphor has been prepared by Joyce, who attributes to it sedative properties.

**CHEMISTRY OF ANTITOXINS.**—The problem of solving the chemical constitution of antitoxins is a step nearer towards solution by the discovery of Proscher (*Munch. Med. Woch.*) of a method of removing from the serum all traces of albuminoid matters, without impairing its properties. This, of course, proves that antitoxins do not belong to the albuminoid compounds, as has hitherto been supposed, although we are, it is true, still in the dark as to what group they should be attached to.

## ETIOLOGY AND PREVENTION OF INFECTIOUS DISEASES OF ANIMALS.

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A Paper read and illustrated by Stereopticon Views at the Annual Meeting of the Veterinary Medical Association of New Jersey, at Trenton, Jan. 8, 1903.

The modern conception of a specific cause for each of the infectious or contagious diseases had its origin and development with the science of bacteriology. It is both interesting and instructive to note that it is one of the practical results of the researches in natural history. With the recognition of the importance of studying the abnormal in nature with equal care and with as exacting methods as the normal, it soon became evident that the conditions known as disease are simply processes resulting from natural causes. The older pathologists had a glimpse of this. Virchow thought he had found the *agens morbi* in the individual cells of the diseased tissues. However, it remained for Tyndall, a physicist; Pasteur, a chemist; and Koch, a physician, to unite etiology to botony and to zoölogy and to teach the pathologist to go to those sciences for the exciting causes of the infectious diseases. Hunter, Sydenham, and others had already studied and, to a limited degree, classified them in accordance with the interpretation of the organic world about them. Consequently it remained simply for the development of instruments of precision and modern methods of research for the microbiologist to point out with unerring accuracy the specific, causative agents for many of the plagues that have decimated over and over again the animal population of the world.

The first disease which was demonstrated to be due to a microscopic parasite was perbane, a destructive silkworm disease in France. This, Pasteur showed to be due to a fungus. It was not, however, until Koch had discovered the bacterium of tuberculosis and isolated the spirillum of Asiatic cholera that the significance of a specific etiology began to dawn upon the



medical profession. Like the first star of the evening, which is soon surrounded with brighter orbs, these first revelations of specific etiology were quickly followed by other and still more brilliant discoveries respecting the nature and transmission of disease. Finally, we were led to believe, it was demonstrated to us, that infections, the epidemic and epizootic diseases, are simply parasitisms. The man or animal suffering from malaria, tuberculosis or glanders is actually and simply a host entertaining within his very being, and at the expense of his own vital forces, a multitude of ungrateful guests in the form of microscopic plants or animals.

Much of the work that has been done in pathology during the last twenty years has been the search for these specific agents, microscopic plants and animals, which by virtue of their parasitism cause the infectious maladies. The success has been unparalleled in the history of medicine. To-day we encounter epizootics of anthrax, glanders, tuberculosis, hog cholera, Texas fever, and many other of the scourges of former times, with as definite knowledge of their cause, their course, the methods of their dissemination and the measures necessary for their restriction, as has the railroad engineer of his means and power to control his locomotive or the electrician to illuminate our streets.

At the end of the path which specific etiology is constructing through the slough of human and animal diseases, there are still a number of serious maladies concerning whose exciting causes we have as yet little knowledge. Among these may be mentioned smallpox, rinderpest, yellow fever, foot-and-mouth disease, rabies and many others that are now recognized by a variety of vague and indefinite appellations. For this group the search for the specific cause is still in progress, while for the first mentioned, investigations are being made intended to bring forth ways and means for their specific treatment, or, better still, their eradication.

Although simple in fact, the idea of a specific cause is not always easily grasped and consistently adhered to. Let me il-

illustrate with a disease of man with which you are all familiar. Klebs and Loeffler found that diphtheria was caused by a certain species of bacteria. This organism can be found in the throat just before, during, and for a certain time after the symptoms and lesions of the disease have disappeared. This bacterium can be distinguished from other bacteria by certain morphological and physiological properties. If, therefore, we desire to determine whether a case of sore throat is diphtheria, it is simply necessary to establish the presence or absence of this one single species of bacteria. Notwithstanding, with this definite knowledge, the appearance of an epidemic of diphtheria brings forth a great number of bewildering theories or individual notions respecting its origin and cause. These theories the people will often believe, rejecting the specific cause for one which appears to them to be more likely. It sometimes seems, when this disease is actually in our midst, that the intellectual equipoise of many people is disturbed, and that there is a sudden turning from the rational to the irrational, from the demonstrated facts of to-day to the superstitions of former times respecting its etiology and likewise its treatment. On account of this wavering, the disease has spread to others and death has often come as a rapid sequence, simply because the teachings of a specific etiology were not observed. What is true of diphtheria may be predicated for other specific diseases.

Again, outbreaks of disease are encountered among the domesticated animals which suggest an infection, and the diagnosis of hog cholera or anthrax, as the case may be, is, from very general symptoms, easily pronounced. Such a diagnosis, however, means much to the people of the community. It implies that a heartless enemy is in their midst and their flocks and herds if not their families are in danger. Specific etiology teaches us to avoid all uncertainty and not to "cry wolf unless a wolf is near." The methods of modern pathology have made it possible in most cases to determine the cause if it is present, and, if absent a diagnosis of such a serious nature without demonstrated proof is not just, either to the person who makes it,

the owner of the animals, or to the state at large. It is by procuring definite knowledge of the etiology determined with methods of precision, which rarely deceive, that we are led to the truth respecting the cause of these affections. On the other hand, we are often profoundly embarrassed by our ignorance and inefficiency when the cause of death is obscure. However, it seems better to stand by the truth and say we don't know, than to take chances and make with such serious matters in the absence of evidence, a positive diagnosis. It is in this great field of "we don't know" respecting etiology that we should gather our strongest forces for research, and continue the inquiry until an explanation can be found. It has already been demonstrated many times that the cause is often among the unexpected agencies. Permit me to illustrate with a single experience with a supposed epizootic disease.

A few years ago we were called upon to investigate many outbreaks of supposed hog cholera and swine plague prevailing about our larger cities. The examinations failed to reveal the existence of either of these diseases or of any other known infectious malady. Moreover, the history was not that of an infection. The cause seemed to be in the food but this was denied because the owners had always fed this kind of material without loss until then. For more than two years we were unable to find the cause. The answer "we do not know" became very tiresome. Every seemingly possible effort was made to unravel the mystery until finally it was suggested by a farmer that probably the cause would be found in the powdered soap used in the dishwater which was often given to the pigs. This suggestion seemed a good one and arrangements were immediately made to put it to a test. Animals were procured and within two weeks the fact was clearly demonstrated that the quantity of powdered soap used by many dish washers in a single pan of water would, if administered repeatedly for a few days, kill hogs with similar symptoms and like lesions to those found in the animals examined in previous outbreaks in which no cause could be found. Thus, by this unexpected yet simple

method, one of the agents was found that was destroying many animals and which was commonly thought to be an infection. While this is not, biologically speaking, specific etiology, it is referred to here because it brings into bold relief the distinction between a specific biologic agent and those general causative factors of disease so frequently found in improper food and environment.

We are thus led to believe that the first essential of a specific etiology is its value in making a diagnosis. Such an element tends inevitably to the more common use of instruments of precision and the application of a scientific habit of thought. With the incoming of exacting methods of diagnosis there is an outgoing of so-called art. Diagnosis by intuition, by careless "rule of thumb" methods, by an appeal to an experience which is incoördinate, unsystematized and unarranged, is as little trustworthy as the shifting sands of the Sahara. By virtue of a specific cause, diagnosis has become in case of many infections of animals specific, definite, and positive. For this reason the art of veterinary medicine "has grown more practical because more scientific and less theoretic because more practical."

In the doctrine of specific causes, however, there are involved many problems which are mystifying to the beginner and puzzling to the expert but which, nevertheless, demand attention. These fall into two groups, viz.: (1) Those concerning the origin and permanency of the etiological factors themselves and (2) those relating to the dissemination of these agents. If we wind our way through the voluminous literature on infection and the origin of disease producing microorganisms, we shall eventually arrive at present issues with apparent facts to sustain three seemingly conflicting theories respecting the pathogenesis and the origin of specific, disease producing bacteria. The harmonizing of these views is one of the tasks for the future.

The first theory consists in the specificity of the disease producing organisms as set forth by Plenizic, then more acutely by Henle and in later times by Davaine, Pasteur, Klebs, Koch,

and others. This parasitic theory of an infectious disease asserts that every specific infectious disease is caused by a specifically characteristic, small living thing or microbe. Most of these microbes, but not all, are bacteria. These bacteria which are entities altogether external are, as Koch has set forth with great clearness, "the sole, true, and sufficient cause of infectious diseases." This school holds that these pathogenic bacteria are practically unchangeable. At some time in the past they were created and as such they will continue to remain. How such specific agents may produce different forms of disease as clinically observed by every practitioner will be briefly discussed in a later paragraph.

The second theory has been suggested by the investigations of many bacteriologists who maintain the specific character of the infectious diseases, but who hold that the specific organisms are subject to evolutionary changes. Thus Rodet and Roux elicited experimental evidence that the bacillus of typhoid fever was a degenerated form of *B. coli communis*, a bacterial inhabitant of the normal intestine of man and of animals. Hüppe has recently called attention to the fact that certain of the supposed harmless or saprophytic bacteria are often, under favorable conditions, the cause of disease. The investigations made in my laboratory with bacteria from lesions treated in the surgical clinic show that a number of species of supposed harmless microorganisms are capable of and often do produce wound infection. There are also numerous results reported showing that the bacteria of tuberculosis, glanders, diphtheria and still others are the final products of mycelial fungi and hence primarily of other species.

The third hypothesis maintains that in certain instances, in order to produce an epizootic there must be an external condition or cause accompanying the infecting microbe. That is, it is affirmed that in order to have the affection "take" as it were, there must be in conjunction with it certain as yet not definitely defined unsanitary conditions.

Although these seemingly contradictory theories are to be



threshed out and eventually unified by the specialists, an appreciation of their existence with a conception of the very limited knowledge of the great possibilities of these living etiological factors will help one to understand more clearly the real significance of the results and assertions of the far sighted or of the extremest. Most of the denunciation of Smith's and Koch's publications on the human and bovine tubercle bacteria has come from those who know nothing about the natural history of the disease. Consequently they are unable to appreciate the distinction between varieties due to different environment or conditions of life, and absolutely different species.

A second benefit derived from a specific etiology is found in its value in differentiating closely related affections. In an old pathology we learn that tuberculosis, glanders and actinomycosis are very closely related if not identical. Now we know that the bacteria of tuberculosis and glanders and the fungus of actinomycosis are as different as three species of flowering plants and equally different are their morbid processes. Conversely, scrofula, lupus, and tabes mesentericus were formerly considered as different diseases, now we know from their etiology that they are varieties of the same parasitism, viz., tuberculosis. Many other illustrations could be cited. With the existence of definite causes the isolation and grouping of animal diseases will continue until they are classified in accordance with their etiology.

This brings us to the explanation of the variations often found in the course of a disease produced by the same species of bacteria. To understand this it is necessary to note that we are dealing with a problem in which the two main factors are unmeasured and to a certain degree unmeasurable vital forces. The problem is one in biology, where unexpected deviations may occur as a natural, though unexplained, result of the immediate conditions of life. Further, animals possess varying degrees of resistance and the specific bacteria vary in their pathogenesis and virulence. The causes for variation, therefore, are cast in a simple equation, namely, the course of the disease will change in accordance with the variation in either

the resistance of the animal or the virulence of the bacteria in question. Thus, for example, the bacterium of acute septicæmia which kills rabbits in eighteen hours, may be so changed, that the lesions may become peritonitis, pleuritis, pericarditis, subcutaneous or deep seated abscesses, but nevertheless, one and the same disease. In swine we often see abscesses in the joints due to the localization of hog cholera bacteria, which, owing to one or the other or both of the causes given, have produced in the place of acute intestinal ulcerations, long continued and painful localized joint abscesses. The formula is simple; but define for us who can, the range of influences that may modify that subtle property of bacteria which we call virulence? What elements in the animal body impart to it a natural resistance? Another question of much importance is that which concerns the influence of the host upon the parasite. It has already been found, that in many cases, "the continuous passage of the species of bacteria through a single species of animals, tends to increase its virulence for that species and to attenuate it for certain, if not for all others." This hypothesis, which needs to be verified, is one of vital importance respecting the transmission of infectious diseases from animal to man and *vice versa*. It is well to know that, in most cases at least, these diseases are transmitted from one individual to another of the same species, and that infection from one species to another is the exception rather than the rule.

In a third place; a specific cause is of great assistance in determining the channels through which the virus of an infectious disease are disseminated. When an outbreak or a sporadic case of some serious infectious disease appears it enables one, in most cases at least, to explain how it happens to occur, to tell the owner how to prevent further loss, and the community how to protect its herds. To be sure this is not always easy, but when the probable source of infection is indicated, the specific cause is pointed out, the means by which this definite agent can escape and infect other animals are all carefully and fully explained, the problem is practically solved. When these condi-

tions are not fully appreciated, wide spread epizootics are liable to occur. It is because of the neglect to recognize this definite agent, to recognize the conditions under which it may live and be carried from one place to another, that the infectious diseases are of so much importance to our live-stock industry. The exposure of animals in infected cars, feeding pens and stables, the introduction of a diseased animal into a healthy herd, or one still healthy in appearance but already infected, are a few of the channels through which the virus may gain entrance. The literature is teeming with cases illustrating, in a striking manner, the unexpected ways by which the minute disease producing organisms gain entrance to their host and in turn perpetuate their species. The problems for us to solve, therefore, are the elucidation of the life history of these invading organisms. Who would have believed twenty years ago that the rats around the country slaughter houses are largely responsible for the spread of trichinosis; that the cattle tick transmitted the cause of Texas cattle fever; or that malaria and yellow fever are spread by means of the mosquito?

These are but a few of the discoveries which have shattered the empiricism of the older pathology and established in its stead preventive medicine. Individual opinions respecting etiology are being rapidly replaced by demonstrated living causes which all who will, may see and study for themselves. Finally, the entire science of comparative medicine, which controls its practice, is being reconstructed in accordance with the teachings of definite, specific, etiological factors.

[NOTE.—This paper was followed by an exhibition of about forty lantern slides illustrating the cause and means of transmission of specific diseases.]

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FARMER PEACHSTONE: "Gosh a mighty, doctor, can't you do sumthin' for a feller more'n you're doin'?" I'm plump tired of six meals a day—three goin' up and three goin' down."

DR. ADOLPH EICHORN, B. A. I., stationed at Milwaukee, has been transferred to the East in connection with the investigation of foot-and-mouth disease.

## PRESIDENT'S ADDRESS.

BY DR. WILLIAM HERBERT LOWE, OF PATERSON, N. J.

Delivered before the Veterinary Medical Association of New Jersey, at Trenton, January 8th, 1903.

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*Fellow Members and Colleagues:—*

The veterinarian is a student of life. The Bible and scientific research agree that vegetable and animal life existed on this earth before man, and the veterinarian believes in beginning his studies at the beginning for the benefit of animal life in general as well as for the benefit of man himself. There are two worlds of life that man cannot see unaided—in one the organisms are so infinitesimally small that they cannot be seen with the naked eye, and in the other the beings cannot be seen with the naked eye because they are beyond his horizon. As man has dominion over the lower animals it is incumbent on him, in the very nature of things, that certain men should make a study and practice of animal or veterinary science for the benefit of our material and business prosperity as well as for such knowledge as concerns the health and lives of ourselves.

Some people do not like the profession of the veterinarian because in his practice he has to go into stables, treat the accidents and ailments of animals, and come in contact with attendants of animals. I would like to remind these people of the incident of Christ's birth; how He was born in a stable, wrapped in swaddling clothes and laid in a manger with the cattle. He was not contaminated and neither will anyone of to-day be if he is properly constituted and has right and noble impulses. I allude to the incident of Christ's birth at this time simply to remind superficial people that it is always well to have a full understanding of any subject before passing judgment upon it.

Experiments made upon animals during the last few years, the study of vegetable and animal life in its elementary and minutest forms, together with recent discoveries in chemistry,

are exceedingly rich in the results of new discoveries and important investigations, which have revolutionized the previously-conceived ideas of medical men as to the etiology of diseases, which are not only of great practical importance to the veterinarian in his practice, but are of vital importance to mankind, since they furnish the foundation for modern and intelligent treatment of many of the diseases that afflict the human family.

The fundamental facts of the pathology of the more common of the infectious diseases of animals, in the light of our present-day knowledge, will be given us to-day in a concise form and illustrated by the stereopticon, by one who stands in the front rank among American comparative pathologists and bacteriologists.

During the last three years the veterinary profession of New Jersey has been making history that will ever be of increasing benefit and advantage to the people of our State, and an enduring honor to the veterinarians who made possible the triumphs and achievements that we record to-day. I will not dwell upon the recent struggles and labors of many loyal members of this organization, for the work they did and the personal sacrifices they made are still fresh in our memories.

Veterinary annals will record three triumphant days in New Jersey.

The first is January 11th, 1900, which day witnessed one of the most remarkable gatherings that ever occurred in the history of veterinary medicine, when there gathered together the largest number of veterinarians that had ever assembled at one time in New Jersey, and resulted in the surrender of two State charters and seals and the successful and complete amalgamation of three State societies in one strong harmonious body.

The second triumphant day was March 17th, 1902, when Governor Franklin Murphy signed Senate Bill No. 76, by Senator Wood McKee, entitled "an act to regulate the practice of veterinary medicine, surgery and dentistry in the State of New Jersey, to license veterinarians and to punish persons violating the provisions thereof," thus making this bill a sovereign



law of our State. This law is known as Chapter 18, Laws of 1902.

The third triumphant day was May 5th, 1902, when the five members of the State Board of Veterinary Medical Examiners appointed by Governor Murphy took the oath of office in the State House and organized the veterinary board pursuant to the provisions of the new law.

I wish to emphasize the fact that the enactment of this law, creating a State Board of Veterinary Medical Examiners to regulate the practice of veterinary medicine, surgery and dentistry in the State of New Jersey, to license veterinarians and to punish persons violating the provisions thereof, was made in recognition of the necessity and value of competent veterinary service to live-stock owners, agricultural and dairy interests and the preservation of public health. In other words, to protect the public from charlatans and quacks, rather than to protect competent veterinarians, for the qualified veterinarian does not need any such protection.

The movement inaugurated this year to organize local societies in the respective counties of the State in affiliation with the Veterinary Medical Association of New Jersey, is one to which I attach a great deal of importance. I am very proud to say that the movement was started in my own county and that on July 7th, 1902, the practitioners of this county organized the Passaic County Veterinary Medical Association, which meets monthly and the meetings are well attended. Every licensed practitioner in the county, now nineteen in number, is an earnest member and staunch supporter of the local organization. Every member signed the constitution, by-laws, code of ethics and schedule of fees adopted by the society. The members are all pledged, *upon their honor*, to support the constitution, by-laws, code of ethics and schedule of fees. I am gratified and delighted to be able to say that each member takes much pride in fulfilling his obligations and extending courtesies to his brother practitioners that add much to the pleasure and satisfaction of practice. Local societies should be organized in

such counties as have a sufficient number of practitioners to warrant it, each in affiliation with the State Association.

One of the most noteworthy events in the veterinary world that occurred during the first year of the twentieth century was the meeting of the American Veterinary Medical Association at Atlantic City, during the first week in September, 1901, where gathered together the representative veterinarians of the entire American continent. It was the distinguished privilege of the Veterinary Medical Association of New Jersey to welcome and entertain the veterinary hosts at this mecca by the sea. The achievements of this meeting add also to the recent history the profession has been making in New Jersey.

The State Laboratory of Hygiene is now located at Trenton, under the supervision of the State Board of Health. The work is conducted free of charge and it consists in examinations for diagnosis in the various affections which are produced by micro-organisms. Communicable diseases of whatever character, whether peculiar to man or to the lower animals, are investigated, and a diagnosis is made when possible. Veterinarians should avail themselves of the use of the laboratory in cases of communicable diseases. The State Board of Health furnishes blanks for reporting contagious diseases in animals. Veterinary practitioners should report all cases of contagious diseases to the State Board of Health on the blanks furnished by the board.

In the year 1862 an act was passed by Congress providing for the establishment of State agricultural colleges for the teaching of agriculture and mechanical arts; and in 1887 Congress passed an act establishing agricultural experiment stations in connection with agricultural colleges for original research into "the physiology of plants and animals, the diseases to which they are severally subject, with the remedies for the same." In other words, Congress several years ago provided for original research in veterinary science as well as for its practical application. I have not had an opportunity, much as I should have liked to have had, of visiting our State Agricultural College and Experiment Station. I would recommend that this

Association appoint a committee to make such visit and ascertain what is being done along the lines of modern veterinary science and art, and if this branch of the work is in the hands of qualified veterinarians, or whether laymen and men of other professions are engaged in it.

I would recommend that this Association adopt a two-days session at its annual meetings, and that it start a State veterinary library. Your President's office has been virtually a veterinary bureau of information during the last two years. The correspondence has been such as to require much time and daily attendance.

Among the positions that New Jersey veterinarians have filled with credit during the past two years are : Health Officer of Summit ; assistant Bacteriologist of the Health Department of Newark ; Veterinarian to the Essex Troop ; Veterinarian to the Atlantic City Horse Show ; Chairman and Members of Committee on Animal Diseases and Animal Food of the New Jersey Sanitary Association ; Veterinarian to local and city boards of health and city veterinarian to some of our larger cities.

I wish in behalf of the Veterinary Medical Association of New Jersey, to take this opportunity to publicly acknowledge the great debt of gratitude the profession of our State owes to the AMERICAN VETERINARY REVIEW and to the *Journal of Comparative Medicine and Veterinary Archives*. One of the greatest sources of encouragement in the work of organization and legislation was the ever earnest and able support by both these journals. Veterinary journalism in this country has become a power in the profession. I do not believe that there is another single factor that is equal to the veterinary press in promoting the individual and common interests of the profession.

The veterinarian cannot be up to date in his knowledge and his methods of practice unless he knows what is going on in the veterinary world. I cannot see how a veterinarian can get along without his REVIEW or his *Journal*. If he does, he is simply starving his mind of such information as would go to enrich it and make him a better and more successful practi-

tioner. He is not only doing an injustice to himself by not keeping in touch with the advance work of the profession, but he is doing an injustice to his clients, and as a natural consequence he is the sufferer in the end. There is no investment that pays a practitioner such large returns as his subscription to the professional periodicals and his dues to his State Association.

Do not neglect to contribute your share of knowledge and experience to the columns of the veterinary press. I would suggest that you do not confine your reports to those of cases of exceptional and rare occurrence, for it is often in some little point in connection with routine manipulation or in the treatment of the more common diseases that the greatest benefit is derived from reporting and recording your experience.

A recent poll of one of the most prosperous of the Western States developed the amazing fact that there were nearly one hundred graduated veterinarians in that State who are not subscribers to any American or foreign veterinary journal. Any comment is unnecessary. There are two things, I am sure, that every progressive up-to-date veterinary practitioner of New Jersey will not be found wanting in—one is, he will be found to be a staunch and earnest member of the Veterinary Medical Association of New Jersey, and the other is, that he is a subscriber to at least one veterinary periodical.

It seems to me that it would be a great advantage in many ways if we had a State Board or Bureau of Animal Industry with a State Veterinarian, who would be Chief of the said board or bureau, somewhat on the same plan as the United States Bureau of Animal Industry, instead of having veterinary matters of the State connected with several of the different State bodies, without professional directorship, as is now the case. It might be well for this Association to appoint a conference committee to see if a plan could not be adopted that would be satisfactory to the State Board of Agriculture, the State Board of Health, the Tuberculosis Commission, and all concerned. It is all right to have veterinarians make inspections

and so on, but there should be a State Veterinarian at Trenton to direct the work along modern scientific lines. As soon as plans can be perfected that will be satisfactory to the various bodies concerned, I would recommend that steps be taken to secure the necessary legislation. Our agricultural and dairy interests, as well as the preservation of the public health, demand that a qualified veterinarian be the chief or director of the veterinary work of the State.

Gentlemen: Just think of it! The Legislature last winter authorized our good friend, the State Entomologist, to chase mosquitoes, and appropriated \$10,000 for his use (which was proper), yet the animal wealth of this entire State, including our great dairy industry, supplying much of the milk for the cities of New York and Philadelphia, is left without the supervision of a qualified State Veterinarian at Trenton.

I cannot refrain before concluding this address from making a few personal remarks. The loyal and enthusiastic support that every officer and member of this amalgamated association has given me as your executive officer during the past two years, has been such as to strengthen my hands, without which the achievements we recount to-day would have been nothing but poor, miserable failures.

This gavel, the silver service, as well as the resolutions you passed on the loss I sustained in the terrible conflagration on the night of February 9th last (when my offices, veterinary buildings and appointments, pharmacy, library, instruments and many other things that money cannot replace, were destroyed), were kind tokens from you that bespeak more than language can express.

You may be interested in knowing that the original draft of our veterinary law was destroyed in that fire. It was in Senator McKee's office, where he and I had gone over it together, the day previous. This must be a good law, for it can truthfully be said that neither fire nor flood could impair or kill it.

Aside from general practice, I see two large uncultivated and sadly neglected fields for the qualified veterinarian. One is



that of animal husbandry and industry. The other is that of veterinary sanitary medicine and police. The public are beginning to demand that adequate safeguards be placed around their meat and milk supply, and I am sure that this Association in its wisdom will not shirk its duty, but on the contrary place the veterinary profession in a position to deal successfully with the important issues that are sure to confront it. Let every veterinarian continue to do his part, be it little or much, and the time is not far distant when the profession will have the satisfaction of having one of its own members as the director of veterinary affairs at Trenton, and the public the benefit of a veterinary service operated upon the basis of modern scientific knowledge and experience that will add, in a large degree, and in a real and substantial manner, to the health and wealth of the people of our beloved State.

STATE VETERINARIAN BRIMHALL, of Minnesota, visited Massachusetts in December to familiarize himself with foot-and-mouth disease and to fortify his State against possible infection.

A GERMAN HYGIENIC MILK SUPPLY EXPOSITION.—Formal notice has been given the officials at Washington, D. C., that a "hygienic milk supply exposition" will be held in the German city of Hamburg on May 3 to 10 next. The first section of the show will include dairy cows of various breeds, stable fittings, dairy foods and testing of and management of milk in stable and elsewhere. The second section will include veterinary control of milk, legislation relating to dairies and milk supply, diseases of milk cows, infection of and by water, sanitary management and kindred matters. The third section will deal with the sanitary conveyance of milk, Pasteurizing, cleansing of cans and other vessels, machinery, bottling and so forth. Section four will deal with the management and sale of milk. The next section will include milk legislation and administration, laws, enforcement of same and the like. The last sections will deal with the scientific examination of milk, preparations derived from milk and machinery and apparatus for the treatment of milk in the household. It is understood that American manufacturers propose to make an extensive exhibit of dairy appliances made in the United States.—(*Breeder's Gazette.*)

**SCLEROSTOMA TETRACANTHUS.**

BY DR. N. I. STRINGER, WATSEKA, ILL.

Read at Chicago before Illinois State Veterinary Medical Association.

In presenting this subject for your consideration I do not do so with the thought of adding anything new upon the life history or anatomy of this parasite.

I appreciate listening to a scientific paper and its discussion, but I am not competent to write such a paper; so will endeavor to present something that I have seen in actual practice, which I hope will be of interest to my brother practitioners and possibly may assist them to correctly diagnose a peculiar case now and then that may in the past have been a puzzle.

It has been my fortune, or misfortune, to have seen a good many cases of death in the equine race caused by these parasites. There does not seem to be much literature upon this subject. The ravages of this parasite have usually been attributed to the *Strongylus armatus*.

From what knowledge I have been able to gain regarding the two parasites macroscopically, they look very much alike, but, as I understand, the armatus infest the blood vessels, producing aneurisms, embolisms, and thrombosis, while the tetracanthus confine themselves wholly to the intestines.

Fröhner only makes a mere mention of them. Neuman does not give a very full description of them.

Dr. J. F. Winchester, in 1892, read a very extensive paper before the U. S. V. M. A. about the armed sclerostome (*Strongylus armatus*), but did not mention anything about the tetracanthus. This most instructive paper may be read by referring to page 288 of the proceedings of the U. S. V. M. A., 1892; also to page 359, AMERICAN VETERINARY REVIEW, October number, 1892.

In the January number, 1893, of the AMERICAN VETERINARY REVIEW is published a paper read before the Iowa State Veterinary Medical Association by Dr. G. L. Buffington upon the subject of this paper.

The description and round of life is given by Dr. Buffington, as follows: "The *Sclerostoma tetracanthum* is one of the very small nematodes inhabiting the intestines of the horse. The body is slightly tapering anteriorly, of a reddish-brown color when preserved in alcohol, but while in the intestinal canal of the host the larger ones are of a bright red, and the smaller ones a dirty white color. They are from one-fourth to three-fourths of an inch long, the females being a little larger than the males. The mouth is circular, with a salient rim that has a crown of triangular teeth, and outwardly six papillæ, two lateral, small, and on each side of them two others, conical and very prominent. The buccal capsule, cylindrical. The caudal pouch of the male is simply excised on the ventral surface. The posterior lines are trifurcated, the middle doubled, and the anterior cleft. In the female the tail terminates in a point and the vulva is very near the anus. The digestive canal is complete. The ova are segmented in the uterus. They are laid in the intestine of the host, passed out with the fæces, and if the proper conditions, warmth and moisture, are met with, will hatch out in a few days. The external phases in their development are, according to Bailliet, analogous to those of the *Strongylus armatus*, and are about as follows: If, after the ova are hatched out, they gradually grow, their integument becomes folded and forms a kind of sheath in which the worm moults. It is at this period they enter the body of the host in the water the animal drinks, or perhaps on the green forage when on low, damp ground, pass into the intestines, and it is probable that they encyst themselves directly into the mucous membrane of the colon and cæcum without penetrating the circulatory apparatus. At least, no wandering parasites of this kind have ever been observed. They remain imbedded beneath the mucous membrane until they attain sexual maturity, when they again enter the intestinal canal to pass the remainder of their lives."

I think the above quotation from Dr. Buffington gives about all that is known of the life history of these parasites.

About 1891 or 1892 was my first experience with the *Sclerostoma tetracanthum*. A Mr. M., living near Fairbury, Illinois, where I was practicing at that time, called me to see two yearling colts that were acting very strangely, and, as he thought, were starving, as he had just brought them home from a hired pasture. I think it was sometime in June or July. They seemed to be very weak and could hardly walk and could only arise with much difficulty when down. They were somewhat emaciated. One died in a few hours after I saw them, and the other died a day or two after the first one. I was somewhat puzzled, but I always take the opportunity to hold a post-mortem whenever a case terminates "favorably," especially those of a peculiar nature. The large colon and cæcum contained uncountable numbers of the parasites; they are found adhering loosely to the mucous membrane. That same season I saw in that vicinity six or eight cases ranging from yearlings to five-year-olds. The animal usually dies in from a few hours to three or four days after they show signs of the trouble. The usual symptoms first noticed are a weak, staggering gait, haggard expression. When forced to walk it seems to completely exhaust them. They usually quit eating; in some cases that I have seen they would attempt to eat and drink, but could not swallow either food or water, there seeming to be a paralysis of the entire alimentary tract. Occasionally one will go down shortly after showing symptoms and become delirious, struggling and frothing at the mouth; the frothing at the mouth, I think, is due to the inability to swallow the saliva. Those of this weak, trembling, staggering gait will show pallor or blueness of the visible membranes.

Those that are struggling and delirious may show a livid color of the membranes. Fæces in most cases scant, urine of a very high color, usually of a very dark red, and in some cases almost black.

*Post-mortem.*—Tissues almost bloodless. When large blood vessels are severed, blood flows like water, is very dark, almost black in color; it seems to be entirely defibrinated, no coagu-

lum exists anywhere. Bowels very pale in color, in some cases small hæmorrhagic spots may be seen dotted over the peritoneal surface of the large colon and cæcum; apex of cæcum may be considerably congested and gangrenous. In two or three cases I have seen perforations of the bowel, allowing the fluids to escape into the peritoneal cavity, causing peritonitis, the animals showing symptoms of a severe colic before death.

I will cite a few cases that I have had to deal with:

August 23d, 1899, about sundown I was called to Mr. B.'s, near Eureka, Ill. On my arrival I found a mare lying on the ground on her side, spasmodic paroxysms of struggling, and pawing with fore feet, hind limbs motionless. These paroxysms took place every few minutes. She would pay no attention to the stroke of the whip or being spoken to. Temperature  $101^{\circ}$ , respiration 30, pulse 60. Died next day (24th) about noon. On the same evening when called, a horse four years old, was lying down in the barn. I gave him a stimulant; he got up in about an hour. We then got him out of the barn; before morning he also went down and could not get up; soon became delirious, and grew worse very fast. We killed him the next afternoon.

On the same evening (23d) found two mares, staggering gaits, walked with much difficulty, unable to swallow anything. I gave each a capsule of aloin, but do not think they reached the stomachs. One of the mares died on the night of the 25th, and the other about five days later; her exit was hastened by the administration of a lot of concoctions during my absence by the owner and an old moss-backed empiric. On account of the animal not being able to swallow, the dope naturally found its way into the lungs, producing inhalation pneumonia. The empiric's diagnosis of the trouble was "pizzen" (poison); the owner contended that it was witches that were doing the mischief. You may imagine how I enjoyed the situation; the owner would not believe my diagnosis, neither would he discharge me, but insisted upon my staying on the field. In the first three cases upon post-mortem



the mucous membrane of the large colon and cæcum were covered with the *Sclerostoma tetracanthum*. In the last case owing to the decomposed condition of the animal they seemed to have been destroyed. The lungs were gangrenous.

There were six horses in the barn, and they seemed to be feeling well except one that was showing slight symptoms of trouble. I gave all six ol. lini. and spts. terebinth, followed in thirty-six hours with aloin, also ferri sulph. and nux, twice a day. On the morning of September 1st the one that was not feeling well went down and could not get up. He was a driving horse, five years old. I raised him with a sling, by the aid of which he was able to stand, drank water and ate some food, being able to swallow, which none of the other affected ones could do. Before slinging him up he was pawing and showing similar symptoms to the others, but not so severe. They let him out of the sling in three or four days, when he went down and the same symptoms returned. They again raised him, when he seemed to be all right. He got out of the slings twice after that during the next two weeks, when the same symptoms would return. In six weeks he was turned to pasture and showed no more signs of the trouble. The funny part of the programme was that just before the horse was turned to pasture the owner consulted two lady clairvoyants in Peoria, who agreed with him that all his trouble was caused by a certain man, who was his enemy, working under the power of the witches, and for a certain consideration they could break his charm. The owner accepted their proposition, went home and took the horse out of the sling and let him go. But I cannot help but give the credit to the sling and the nux and iron.

One very peculiar thing about the effects of these parasites upon some animals where the symptoms develop slowly and the animal will partake of food and water, if they are kept on their feet by the aid of a sling and treated with vermifuges and tonics, a good many of them will recover.

Six years ago I saw some cases near Fairbury with Dr. Presler for Mr. Pense, seven dying out of the twenty head of young

horses in that pasture. Dr. Presler reports that last summer a year ago in that same neighborhood one man lost thirteen head of young horses. A year ago last September, in Dr. Presler's absence, I was called to the same locality to see some work horses that were affected with the tetracanthus. The man lost three out of the four that he owned.

In September, 1900, a Mr. G., near Milford, Ill., lost five out of six head of horses, ranging from five to fifteen years old. Two of these were mares with colts by their sides. One mare lived about eight days after she began to show symptoms of the trouble. Part of the pasture that these were in was a woods pasture that had recently been used for hogs, and there were a good many hog wallows filled with water.

This year I have seen four cases. Post-mortem showed cæcum and large colon filled with fæces, mucous membrane and fæces covered with tetracanthus, apex of cæcum congested and about a pint of the long white worms (*lumbricoides*) packed in it.

Was called to Cissna Park to see one case, a very large suckling colt, five months old; died a half hour before my arrival; held post-mortem; conditions same as above case, except there being no congestion of apex of cæcum nor *lumbricoides* present.

On the fourth of last month (November) I was called six miles east of Watseka to see a yearling colt that was staggering about, showing the same symptoms of its mate, so the owner told me, that died about three days before. We found this one lying down when I got there; we assisted it to arise, but it walked about with much difficulty; it voided urine soon after it got up; urine a very dark red. It soon laid down, and did not get up again. It died next day about nine o'clock. I held autopsy, and I have never seen as many tetracanthus in any one case as I saw in this one. These two colts were alone in a pasture that was part woods and some of it low along creek.

The horses that died at Eureka were watered from a shallow well and dipped nearly dry every day.

All other cases that I have spoken of were in low pastures or where water stood in puddles; some were part woods.

## PARTURIENT PARALYSIS.

BY DR. D. R. KOHLER, BOYERTOWN, PA.

Read before the Semi-annual Meeting of the Schuylkill Valley Veterinary Association, at Reading, Pa., Dec. 17, 1902.

The subject chosen for this occasion is parturient paralysis. This disease is known by a great number of names, such as "parturient paralysis," "parturient fever," "parturient apoplexy," "milk fever," etc. Now, I merely want to mention some of the facts, as time does not permit to go into details. The rest I want to leave to you for discussion.

*Definition.*—This is a parturient derangement, characterized by suppression of lacteal secretion, congestion of the brain, and paralysis.

The name "milk fever" is very misleading, as sometimes there is no fever present, and the temperature is subnormal.

Parturient paralysis appears to occur wherever milk cows are kept, but is of more frequent occurrence in dairy districts, because there they are fed stronger and are kept especially for milking purposes, and the heavier the milker, the more subject to this derangement.

*Causes.*—As to the causes, there may be a great many, although of late years Schmidt's theory has been much advocated (that is, of the generation in the mammary glands of a poisonous substance from the over activity of the epithelial cells of this gland; that is, that a large quantity of blood goes to the udder after birth, which formerly used to supply the uterus and foetus before birth). This poisonous substance being carried into the circulation to various parts of the body, which act on the nervous system, and characterize the symptoms. This disease occurs principally in cows which give a large quantity of milk; it rarely occurs after the first calving, nearly always after the third or fourth calving. It rarely occurs in old cows; the most dangerous time is just in their prime of profit, and occurs only in cows which appear to be in the best spirit and health.

*Symptoms.*—This disease usually manifests itself within

twenty-four to forty-eight hours after parturition, and sometimes occurs a week or month after parturition. The first symptoms noticed are: the cow becomes restless, stamps, strikes with hind legs, grinds her teeth, has spasms of some of the muscles, then paralysis comes on. She gets weak, staggers and falls. As the disease advances, they usually throw their heads from side to side, and often stretch out flat on the ground. By this time they become unconscious, the eye becomes dull and insensitive to the touch, the pupil dilated, the pulse weak, small and from 60 to 120 per minute.

*Course.*—The course of this disease terminates usually in from three to four days; either recovery takes place or they die in some instances. Profuse diarrhœa sets in and they die from inflammation of the bowels, and complete paralysis of the hind quarters is sometimes a complication. Pneumonia sets in sometimes as a surprise after a recovery of a week or so, usually due to some of the medicines passing into the lungs while drenching.

*The Diagnosis* is usually easy, as the disease is nearly always well developed before the veterinarian is called.

*Treatment.*—The treatment may be divided into two divisions, namely, preventive and curative treatment.

*Preventive Treatment.*—Cows that are in the latter stage of gestation should have hardly any grain, plenty of exercise, and the bowels should be kept in a good condition by giving salines; after calving, the foetal membranes, if not passed, should be removed as early as possible.

*Curative Treatment.*—The treatment that I obtain the best results from is as follows: Internally I give

R	Sulphate strychnia,	grs. ii
	Tr. Barbadoes aloes,	℥ ss
	Nitrous ether,	℥ ss
	Aromatic sp. ammon.,	℥ ss

Same to be repeated in an hour's time; then every two hours till signs of recovery take place, then only every three hours that only to be given with a small vial, as then there is not such

great danger for any medicine passing into the trachea. Then I use Schmidt's treatment (iodide of potassium) for the mammary glands, of which you are all aware. Make the quarters or stable as comfortable as possible; keep the cow well propped up on the sternum, and turn her from side to side every two hours, apply some strong liniment over the loins and blanket her well. As the cow is nearly always unable to urinate when in this condition, the urine should be removed about twice daily as long as necessary. The rectum should be emptied from hard fæces if any is present. After they gain their feet I reduce the strychnine. When they commence to eat and drink be very careful and give them only small quantities at a time.

As there is much to add to this paper, I leave the rest for you for discussion.

ASSAY OF DIGITALIS LEAVES.—H. L. Ziegenbein (*Archiv.*) states that the estimation of digitoxin in digitalis leaves is not a reliable test for the medical value of the drug, because the proportion of this body present bears no relation to the toxicity of the leaves. It also shows that the alcoholic extract of the leaves is from three to four times as energetic as a solution of digitoxin of the same relative strength. The statement that storing diminishes the therapeutic value of the drug is confirmed, also that the leaves obtained from some sources are much more potent than those from other sources.

THERMAL DEATH POINT OF TUBERCLE BACILLI.—R. T. Hewlett (*Trans. Aberdeen Congress*) as the result of experiments with regards to the resistance of tubercle bacilli, arrives at the following conclusions: (1) As regards a non-virulent laboratory culture, a temperature of 60 deg. C. acting for ten minutes is sufficient to destroy the vitality of the bacilli. (2) A temperature of 65 deg. C. acting for fifteen minutes destroyed the infective properties of tubercular sputum in five out of six instances. (3) Tuberculous milk heated to 60 deg. C. for thirty minutes lost its infective power. (4) Tuberculous milk heated to 63-65 deg. C. for twenty minutes in the Allenbury's Pasteurizer lost its infective power. (5) In all probability, pasteurization in which the milk is retained at a temperature above 65 deg. C. for not less than twenty minutes is efficient, especially if no film is formed.



## INTESTINAL ANTISEPSIS.

By J. H. CRAWFORD, HARVARD, ILL.

Read before the Illinois State Veterinary Medical Association, Dec. 2, 1902.

A more appropriate name might have been chosen, but, as Shakespeare says, "What is in a name?" Therefore, in introducing the subject, we will consider it in three different phases: (1) Why we should use them. (2) What we expect to accomplish by their use. (3) Which of the numerous antiseptic agents can we safely use with a fair prospect of obtaining results?

Chemical investigation has shown that many diseases depend upon the products of putrefaction and fermentation, rather than upon the direct action of microbes upon the tissues. These products are called ptomaines, which resemble vegetable alkaloids. These alkaloids, however, are not all poisonous; the poisonous ones are termed toxins. And it is those with which we have to deal. As toxins owe their development to the microorganisms, it follows that toxins formed depend on the material acted upon, the conditions under which the putrefaction goes on, and probably the health of the animal in whose body these processes are taking place. Some bacteria require oxygen, others do not, consequently the toxins manufactured by those two classes of organisms differ very materially. Metabolism is taking place everywhere within the body, with the result that the complex molecules of brain and muscle in their catalysis pass through intermediate stages, and are finally resolved into carbonic acid, water, and ammonia. We do not know what part oxygen plays in the processes of putrefaction, but the researches of Pasteur have shown that bacteria play a very important part in the disintegrating processes of organic matter, and in no part of the body is this more true than in the intestines.

Self-poisoning from the absorption of toxic substances secreted in the intestines is only prevented by the activity of the excretory organs of the body, chiefly the kidneys and liver, the

liver acting the part of a sentinel to the material brought by the portal vein from the alimentary canal.

Therefore, when we consider the amount of toxic materials in the alimentary tract of a diseased animal, when suffering from any of the infectious or contagious diseases or any of the various digestive troubles, particularly where there is considerable fermentation going on, also in diarrhoeas, parturient paresis, rheumatism, laminitis, and other diseases too numerous to mention, it can be readily seen that the use of intestinal antiseptics in such cases are not only necessary but imperative.

We will pass on to the second consideration, that is, what we expect to accomplish by the exhibition of antiseptics in the alimentary tract.

Undoubtedly the first indication is to get rid of the material which gives rise to the putrefactive and fermentative processes. This is most readily accomplished by inducing catharsis. Unfortunately, this is not always a safe procedure in the horse. The next best thing is to come as near that point as possible, by dieting and by the use of the proper laxative remedies, such as the condition indicates. On the other hand, free catharsis may be induced by eserine, arecoline, barium, aloes, aloin, oils, etc. Having cleared out the alimentary tract, our antiseptics are now in order. Having selected our remedies according to the conditions present, by their use we expect to prevent, as far as possible, the formation of various toxins and gases; in other words, to get the alimentary tract in as aseptic a condition as we can, and keep it so. Of course, we understand that it is absolutely impossible to get the digestive tract in a purely aseptic condition, but there is no doubt that a great deal can be accomplished by the administration of antiseptic remedies, and, in so doing, we will undoubtedly modify to a large extent the pathological processes induced by the absorption of toxins into the system.

We now come to the point where we have to select remedies, and in our selection we must be careful to administer only drugs that are reliable, and in doses that are not in themselves poisonous; for in killing the microbes we must not destroy the

patient. At the same time, we know that the best way to disinfect the stomach and intestines is to restore them to their normal condition. Amongst the large numbers of antiseptic agents at our disposal are the various members of the coal-tar group, such as carbolic acid, creolin, salol, creosote, naphthalin, and beta-naphthol. There is also bismuth salicylate, salicylic acid, iodoform, boric acid, quinine, charcoal, and there is also the various mercurial salts, which are all antiseptic and also more or less poisonous.

However, we may combine several of these agents, and out of them get a fairly reliable and safe antiseptic remedy. Of late, I have used a remedy composed after the following formula :

Carbolic acid,	℥ iij
Boric acid,	℥ iv
Oil of gaultheria,	℥ i
F. E. capsicum,	℥ iss
Glycerine,	℥ viij
Alcohol,	℥ iij
Aqua, q. s.,	℥ ov

This is given in doses of from one to two ounces, and can be repeated as necessity requires. The above formula is open to criticism, no doubt. It may be called conglomerate, shot-gun, or anything else. It may also be said that as good or better results can be obtained by one single drug. That may be so in any one disease, by selecting the drug best suited to that disease, but for a good general intestinal antiseptic the above has proven successful in my practice, and a careful summing up of the various actions of the drugs used will substantiate that proposition. Expense is also a very important point on account of the large doses used. On that point it fills the bill admirably. It can be used in colics, the pneumonias, and, in fact, in all febrile or digestive troubles as a general intestinal antiseptic. In conclusion, I would say, that, by the presentation of this paper, I hope to bring out a good sharp discussion that we may all profit by, and that it may stimulate us to give the subject of intestinal antiseptics more thought, and by so doing evolve new ideas that may redound to the benefit of veterinary science and veterinary practitioners in general.

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## REPORTS OF CASES.

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*"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."*

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### TUMOR AND FISTULA OF THE ABDOMEN IN A HORSE.

By W. C. MILLER, D. V. S., House Surgeon American Veterinary Hospital, New York.

Dr. Doyle, of this city, was called in September to see a chestnut gelding, which had a discharge from the abdomen, and which the owner said was noticed a few days previously.

Upon examination he found a slight swelling on the abdomen, a few inches posterior to the umbilicus, and having a small opening in the centre, which was discharging slightly. Upon probing, it led into a tract leading upwards and backwards, following the direction of the abdominal wall for about six inches. Temperature  $103\frac{1}{2}^{\circ}$  F., respirations accelerated, but eating well, and working better than any other horse in the stable. This horse had been owned but a short time by the client of Dr. Doyle, having been previously owned by a New York milk concern, and it is possible that the animal may have been in that condition for sometime.

A short time after Dr. Doyle saw the horse he noticed a doughy swelling, about six inches in diameter, about three inches from the opening. He opened the swelling, which he found to be filled with a large quantity of what looked like blood-clots, and was very foetid. This he removed and dressed the wound, packing the cavity with antiseptic gauze.

The horse was kept in for a few days, when he was put out again to work, which he did willingly and well. The wound was dressed continually, but there always remained a slight thin discharge. Temperature varied for ten weeks between  $102$  and  $105^{\circ}$  F., and appetite remained excellent.

On Nov. 15, the horse showed colic symptoms, and Dr. Doyle advised the owner to send him to this hospital, which was done on the 17th.

Upon examination a small, hard swelling was noticed upon the abdomen, with an opening in the centre leading into a tract, allowing the probe to penetrate upwards and backwards nine inches along the abdominal wall, not penetrating it. No tract in any other direction and a slight discharge issuing from the opening.

The tract was injected with antiseptic solutions, as the discharge was very slight, and did not indicate opening at the time. During the next few days the horse's appetite was very good and temperature averaged 102° F., but having a dull appearance. The fifth day after being here the animal had an attack of colic which lasted about two hours—giving cannabis indica and opium to relieve pain. His appetite became poor then, and the animal became weaker. On the seventh day he had a very bad attack of colic, lasting all day—horse gradually getting weaker, requiring stimulation. Pulse very weak, and towards evening imperceptible. His correct temperature could not be taken on account of the flabby condition of the rectum, and at 9.30 that night he died.

*Post-mortem.*—An incision was made following up the direction of the probe leading into the tract and the tract opened, the walls of which were thickened very much and easily broken down. As this did not reveal anything to any satisfaction, the tract not penetrating the abdominal wall, the abdominal cavity was examined, and at the seat of the opening of the tract, a short space from the umbilicus, there was a very large hard thickening, covering an area of about seven inches, with a minute opening into the abdominal cavity.

The large colon was firmly adherent to the abdominal wall at the point covering the entire extent of the thickening. This was dissected away and the intestines removed, and a large abscess, the size of a man's head, was discovered on the upper part of the colon over the adhesion. This was opened, as was the colon. The abscess was filled with a large quantity of cheesy matter, in the centre of which was some small calcareous deposits. The abscess communicated with the interior of the colon by a very small opening, which was entirely surrounded by a large growth resembling a cauliflower, covering it up so that it did not permit the abscess to discharge its contents into the colon. The peritoneum was inflamed in many places, and a few small inflamed areas upon the small colon were also noticed.

#### TWO CASES OF TETANUS.

By THEO. A. KRAGNESS, M. D. V., 730 W. 63d St., Chicago, Ill.

CASE NO. I.—June 21st, I was called to attend a mule. The following history was given by the attendant on arrival:

Three weeks ago he picked up a nail. The nail was removed by a blacksmith, the wound dressed, no lameness followed.



The animal presented all the symptoms characteristic of tetanus—such as muscular rigidity, elevation of head and tail, dropping of membrana nictitans, outward curvature of the hocks and trismus.

The animal was a fine specimen of his specie: dark brown, standing 17 hands, weighing sixteen hundred pounds, and cost his owner two hundred and fifty dollars three months before accident. As I had just taken up a new location and the owner was a new client, I was desirous of making a good impression by affecting a cure if possible. Consequently I was at odds as to what treatment to prescribe. Whether to pursue the "old line" of treatment or to use tetanus antitoxin was the question I had to decide. Having had a wide experience with antitoxin while house surgeon at the McKillip Veterinary Hospital (Chicago) with negative results, I finally decided in favor of the "old line" treatment, and proceeded accordingly.

*Treatment.*—I daily administered mercurous chloride in 30 grain doses, given as an electuary; also potassium bromide, 15 gr., in pail of water every six hours.

The patient showed no change until July 1st, when the rigidity of the muscles became suddenly increased and the jaws completely locked; the patient showed a great desire for water.

I placed the patient in slings and changed the treatment, discontinuing the calomel and administered fl. ex. gel-semium, which was pushed to the limit. This condition continued for three days, when a general relaxation took place, which was accompanied by increasing thirst (the patient drinking seven pails of water inside of an hour), which was accompanied by excessive urination, which pointed to a diabetes. It was also noticed that drinking induced violent coughing.

With the cessation of trismus the appetite became ravenous. The patient was allowed green food, of which he partook enormously. This condition continued until July 18th, at which time I made my regular morning call and found the patient much distressed. Respiration 50; pulse about 100, wiry and intermittent, nostrils dilated, mucous membranes deeply injected, temperature 105° F. Upon careful examination I found the animal had hypostatic pneumonia. This continued with a little change for the better (except for failing appetite) until July 26th; at which time the patient ceased to take nourishment. Toward evening of the same day the patient showed symptoms of colic. He pawed, kicked and threw himself violently about in the slings. I diagnosed impaction of the colon,

and administered anodynes and physic and gave nerve stimulants and copious enemas, all of which seemed to have very little effect upon his condition until the evening of the third day, when he had one ordinary movement of the bowels. The colic continued until the fifth day, when I took him out of the slings, had him exercised one-half hour three times a day. At this time muscular relaxation was rapid, the appetite improved, peristalsis reestablished, but no normal passages until the tenth day. With proper bowel movements established, the appetite and general condition improved, but the desire for water and abnormal urination continued, but gradually disappeared. He received tonics, improved rapidly in flesh and is doing regular work again.

CASE NO. II.—On July 24th I was called to attend a horse in which I diagnosed tetanus. The patient had been attended by another veterinary surgeon, who advised the use of antitoxin, but the owner objected to the cost. I discouraged the use of antitoxin and administered the same treatment as in case No. I. The patient being in a private stable, where he would receive the best of care, I decided not to put him in slings, but used all precaution against accident. The animal made an absolute recovery.

Here are two cases which my readers may take for what they are worth. I have used both the old and the new (or antitoxin) modes of treatment, and in the future shall continue on the old line. I think there is something yet to be done before antitoxin treatment for tetanus proves successful.

#### WHERE I FOUND MY CANULA.

By NEWTON G. LE GEAR, V. S., Waco, Texas.

On Aug. 15, 1901, I was called to see a Jersey cow, about eight years old, with distension of the rumen. After trying for one whole night to relieve her condition by ordinary means, and failing, I decided to perform rumenotomy. But let me state that I had a two-fold object in operating: one to relieve the cow's stomach, and the other to extract a lost canula, which had been drawn in by peristalsis.

Standing the cow with her right side against the inside of the barn, I made an incision through the left flank into the paunch; and after removing nearly a wash-tub full of coarse, undigested food, I began a vigorous search for the lost instrument. Expecting, of course, without stopping to think, to find

it on the inside of the incised viscus; and, failing to do so, after a long search, I gave it up in despair.

As I was stitching up the wound in the rumen with catgut, I accidentally placed my fingers against the lost object (it being external to and upon the paunch), and extracted it at once. And finally suturing peritoneum, muscles and skin all at once with silk, and applying a bandage around the body, the operation was completed.

In about four or five days this same cow gorged herself again, and the distension caused her side to give way, but the rent was not where I made the incision, it being exactly where the stitches went through, a little to one side. This opening we dressed antiseptically, and succeeded in closing it in two or three weeks. And in about four weeks she dropped a fine calf and did exceedingly well.

About one year afterward she was sent out to pasture, and while there, contracted Texas fever and died Oct. 5, 1902. The post-mortem lesions showed that extensive adhesion had taken place between the rumen and the abdominal wall.

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#### EXTRA-UTERINE PREGNANCY IN EWE.

By B. F. KAUPP, D. V. S., Kansas City, Mo.

Sheep, about four years old, was slaughtered. The abdominal cavity upon being opened was noted to contain a tumefaction of considerable size, adhering to the abdominal wall and surrounding tissues, one end laying close up to the left horn of the uterus. The tumefaction upon being opened was found to contain an apparently fully developed foetus, which was in a state of decomposition. At this time there was a fibrous capsule surrounding the mass. The uterus was normal and gravid at this time, containing a foetus perhaps three months old and in a perfectly normal condition.

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#### NORMAL SALINE SOLUTION IN AZOTURIA.

By J. B. CAUGHEY, D. V. S., Columbiana, Ohio.

First of January had call to a horse that had been down five hours with azoturia. Gave half an ounce of potassium iodide, followed one hour later by half a gallon of normal saline solution, injected in the ilio-lumbar region. In forty-five minutes the horse got to his feet, and made a good recovery. This is the third time I have used it, with two recoveries.

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EXTRACTS FROM EXCHANGES.

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GERMAN REVIEW.

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By ADOLPH EICHHORN, D. V. S., Bureau of Animal Industry, Albany, N. Y.

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PARALYSIS OF THE OBTURATOR NERVE, IN A HORSE AND A DOG [*Prof. Schimmel*].—A horse was brought to the clinic of the Veterinary School at Utrecht, with the history that the animal became suddenly lame on the off hind leg, and revealed on examination the following condition: Supported more on its off hind leg, the horse placed this leg very markedly outward, which was more pronounced when the patient was urged to move. By doing so, the horse moved the leg in an outward curve, striking the foot on the ground, in a clumsy way. Pain and other inflammatory symptoms or fracture were not detectable. On the following day, the horse was unable to rise, and therefore was placed in slings. The diagnosis of simple paralysis of the obturator nerve was not made on account of the strong abduction of the leg, but a rupture of the abductor muscles was suspected, in spite of the fact that there were no positive indications for it. Strong irritants were applied to the right hip, and the animal was kept in slings for two months, without resulting in the slightest improvement. By that time a marked atrophy of the muscles of the right thigh was noticeable. At the beginning of the third month, the horse was removed from the slings, and soon a slight improvement was noticeable, in that the animal was able to get up without assistance. Exercise was given, from which rapid improvement was observed, and in a short time complete recovery took place, the horse showing only very slight abduction on trotting, but this also disappeared . . . . An Irish setter, nine months old, while jumping from a height, was injured by a falling ladder, after which the dog carried the left hind leg in an outward curve, which had a width of 6.5 cm. The muscles were greatly atrophied, especially so the abductors. Passive movements of the leg in all directions could have been practiced without the slightest pain to the animal. The diagnosis of paralysis of the obturator nerve was established, as all inflammatory symptoms were absent. Treatment, which consisted in rest, massage and rubbing with olive oil, was without any effects. After this, ex-

ercise treatment was given, which finally resulted in the desired cure.—(*Koch's Monatshr.*)

EXAMINATIONS OF THE EFFECT OF SUBLAMINS (MERCURY SULPHATE-AETHYLEN-DIAMIN) AS DISINFECTANT [*Dr. M. Blumberg*].—The application of sublimate, as known, has some disadvantages: it is a strong corrosive; some people can not endure it at all; produces roughness and brittleness of the hands. Prof. Koenig and the author therefore looked for another mercury preparation, which, with the same disinfecting effects, should not possess the disagreeable properties. The chemical factory, Shering, in Berlin, prepared, according to their suggestions, the combination of mercury citrate with aethylen-diamin. This preparation possesses the desired properties, but is a liquid, and therefore not very practical in practice. Shering succeeded in removing this inconvenience by using the mercury sulphate instead of the citrate, by which the product is a solid, named shortly sublamins. Blumberg, on the ground of his experimentations, came to the following conclusions, in regard to the properties of the new remedy: (1) It contains the same disinfecting power as the sublimate. (2) It has the superiority over it of not irritating the skin, in its strongest concentration. (3) By soiling the hand, with highly virulent infectious material, easily a still higher disinfecting power can be obtained than with the sublimate, on account of the possibility of a stronger concentration of the new agent. (4) The penetrating property is higher than that of sublimate. (5) Sublamin dissolves instantly in water, even in high concentrations, while the tablets of sublimate require considerable time. (6) Sublamin can be made in the form of tablets which are very soluble.—(*Muench. Med. Wochenschr.*)

PREVENTIVE INOCULATIONS AGAINST RABIES IN FOALS [*Fr. Kurtz and Dr. A. Aryezky*].—On a stockfarm, out of 47 foals, two manifested simultaneously typical symptoms of rabies, and both died on the following day. In examining the whole stock, on seven foals small scars were found, which under the circumstances must be considered as suspicious of infectious bites. How the infection occurred, could not be traced with certainty. After fourteen days, another of the foals became affected; it was one on which a scar was found. The remaining 44 foals were subjected to antirabic inoculations. The inoculations were performed with Pasteur's regular preparation. Between the first and second inoculation a period of five days elapsed, while between the second and third only two days.



The injection was made under the skin of the neck. A rise in temperature or any other effects were not observed. The inoculated animals remained healthy; no other case of rabies has appeared in six months, which is the period that has elapsed since the inoculations. These kind of inoculations were for the first time undertaken in veterinary practice, and prove that antirabic inoculations are applicable in the practice of large domesticated animals, and that when the bitten animals are inoculated at the right time, the development of rabies can be prevented.—(*Veterinarius*.)

EXPERIMENTS ON FEEDING TUBERCULOSIS IN CATTLE AND CALVES [*Prof. Dr. Schottelins*].—Two adult cattle and three calves were employed for these experiments. One cow and one calf served as control animals, the other cow and two calves were used for the experiments. The animals, which were very carefully examined for their condition of health, descended from a race which are bred in the mountainous region, and which, as experience proved, are very rarely attacked with tuberculosis. The calves were six weeks old, strong and healthy. For infectious material was used the sputum of tubercular persons. The same was given to the three animals in the state in which it was expectorated; the calves received it in milk, while the cow got hers with the green food. Each animal received about 50 gm. for one dose. From May 24th until August 29th, altogether 24 times, such infected food was given. Neither of the animals showed any disturbance in their health; there was no fever. Only on experienced inspection one could notice a slight decline in the condition of the cow and in one calf. On September 22d the animals were destroyed in the presence of the author and Prof. Dr. Schleggal. The autopsies revealed the following conditions: The two control animals were perfectly healthy, their lymph glands were free from tubercular infection. While in the three infected animals marked tubercular changes were found. In the cow, tubercular enteritis, marked swelling of the mesenteric glands, besides tubercular caseation and calcification of the mediastinal and bronchial glands, and, finally, a caseated tubercular pneumonia, with a few miliary tubercles on the pleura. In the calves the submaxillary glands were hypertrophied, and cheesy or calcareous; also some of the mesenteric glands showed tubercular degeneration. In all three infected animals all the lymph glands, not excepting those of the muscles, were much swollen and invaded with pale herds of necrotic appearance. The microscopic bacterio-

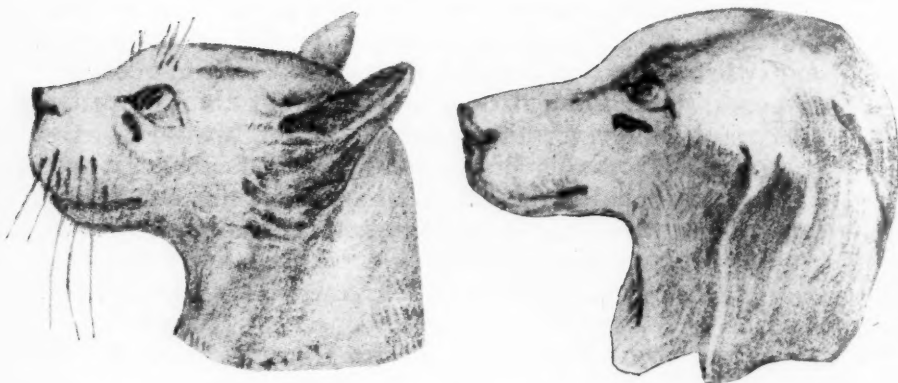
logical examination confirmed the microscopic conditions by proving the presence of tubercle bacilli in the parts showing pathological changes. The results of these experiments appear remarkable to the author from the point that in directing them, everything artificial not answering the natural conditions, was avoided, and because the test animals were exposed to such conditions as may arise in all cases where animals are attended by tubercular persons. But of not less importance are the results of these experiments, proving that human tuberculosis is transmissible to cattle.—(*Muench. Med. Wochenschr.*)

ABOUT THE SIGNIFICATION OF THE VESICULÆ SEMINALIS [*Voirin*].—The author undertook a series of experiments, on slaughter and experimental animals, to solve the question in mammalia, whether the vesiculæ seminalis should be considered as a receptacula seminis, or as a gland with secretory function for the generative fluid. The results of these experiments are the following: (1) The vesiculæ seminalis are accessory glands. (2) They are not reservoirs for the spermatozoa. (3) The name "vesiculæ seminalis" is therefore not appropriate and should be replaced by glandulæ vesicularis. (4) Spermatozoa are found only exceptionally in the contents of the vesiculæ seminalis. Whether the spermatozoa are always found in the vesiculæ seminalis in sexual excitement of long duration, is yet to be determined. The secretion of the glandulæ seminalis is mixed in the sinus urogenitalis, with the secretion of the testicles. (5) The secretion of the glandulæ seminalis is essential in impregnation.—(*Zeitschr f. Thierheilk.*)

#### FRENCH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

DENTAL ORIGIN OF FISTULÆ OF THE SUB-ORBITAL REGION IN CARNIVOROUS ANIMALS [*Prof. Labat*].—These two rough drawings are taken from an article of the author illustrating two cases of a lesion, quite curious, which often attacks dogs or cats, and consists in a fistula developed below the eye. It generally appears as an insignificant wound, and is considered as due to a scratch, a bite or some ordinary cause. Still suppuration goes on, the wound takes a fistulous aspect, it remains for a long time, and the treatment prescribed against it remains without result. The cause is overlooked and the lesion continues.



When it has existed for some time the surroundings of the fistula are somewhat tumefied, the region is painful, and a probe introduced into the fistulous tract meets a rough and necrosed surface, and after careful manipulations arrives upon one of the roots of a molar tooth, the large superior molar. When the probe reaches that point, the exploration is painful and the animal groans more or less and rebels against further examination. There is an alveolitis of the tooth which may or not be accompanied with necrosis and perforation of the alveolar walls. The treatment is readily indicated, the extraction of the tooth, which sometimes requires a great deal of care on account of its size and of the diseased condition of the maxillary bone. Antiseptic dressing of the fistula and of the alveolar cavity are the indications of the after treatment. Although the operation is not serious, there are instances where general anæsthesia has to be resorted to, specially if the animal struggles much or as the cat scratches, no matter how well secured.—(*Revue Veterinaire*).

LUXATION OF THE ELBOWJOINT IN A HORSE [*L. Castagné*].—Although not very frequent, this accident is sometimes met in practice, and in some instances unattended with serious complications, as in the case recorded by the author. While trotting, a horse made a misstep and the shaft of the cart he is pulling slips inside of the elbow and the luxation takes place. The right fore leg is twisted outwards in the entire section below the elbow, and besides flexed at the elbow and the knee. The radio-cubital articular surface has been forced to a rotatory movement outwards on the humeral surface. The internal trochlea of the humerus corresponds to the radial only by its anterior border. For the deviation of the lower part of the leg, it is such that the anterior face of the knee has become antero-

internal and the solar face of the foot is postero-external. The olecranon, deviated outwards, overlaps by its beak the humeral trochlea. The flexion of the elbow, knee and fetlock is due to the abnormal twistings of the flexor muscles of those regions. From the knee down, the leg is twisted, flexed, stiff and unable to rest on the ground. The reduction was easy, because it was made early and remained perfect without bandage. The olecranon was seized with the left hand, with the fingers pressing on the projecting humeral trochlea. Having with the right hand flexed firmly the dislocated joint in raising the knee, the horse reared under the influence of the pain and everything went in its place, the reduction being produced with an elastic shock and a dull sound of coaptation, very different from those observed in reducing the ends of fractured bones. The reduced joint became the seat of a very severe tumefaction, the parts remain very painful, but towards the twenty-fifth day all had subsided and the animal was returned to work. The treatment after reduction consisted in slings, fine irrigations, massing with soap, gradual mobilization of the dislocated surfaces. Mild blisters and short repeated exercises were also resorted to.—(*Revue Veterin.*)

PERMANGANATE OF POTASSIUM IN ULCERATIVE KERATITIS [*Ben Danon*].—The author recommends the use of tepid solutions of permanganate of potassium, 0.5 per 1000, for swelling of the eye and iristillations. He records four cases where deep ulceration of the cornea existed and in which rapid recovery, which varied between eight and fifteen days, has been obtained, leaving only a small white speck on the cornea scarcely as big as the point of a pin.—(*Revue Veterin.*)

ENORMOUS TESTICULAR TUMOR IN A STEER [*Prof. Ch. Besnoit*].—For years the most various neoplastic lesions of the testicles were improperly classified under the head of "Sarcoceles," and for years also surgical interference with them was objected to under the idea that death was fatally, after a variable length of time, the result of an operation. The following breaks up the legend. A six-year-old steer, castrated by double subcutaneous torsion, several years before, has since a month a tumor of the scrotal region, which was first mistaken for an abscess and explored. Since it has grown very rapidly. This tumor from way up in the groin hangs down as far as the hock and involves the right testicle only. It is hard, irregularly bosselated, painless, very adherent to the skin, which is normal. The animal walks with difficulty, the right hind leg car-



ried in abduction. All the functions are normal; negative results with tuberculin. Reserving the correct diagnosis of the growth, and with a doubtful prognosis, in the perspective of a fatal end if the animal was left alone, an operation was decided upon, and the tumor extracted by a circular incision on the scrotal sac, towards its superior third, dissection upwards as far as required and simple section of the superior peduncle. The operation left exposed the penis and the left testicle, entirely atrophied. It was also removed. An antiseptic dressing was applied and held in place with four quill sutures, and recovery went on without any difficulty. The tumor after it was removed weighed 8 kilos 500—(about 17 pounds). Careful microscopic examination revealed it to be of conjunctive nature. It presented in some points the structure of pure myxoma and in others that of myxo-fibroma.—(*Revue Veter.*)

THE MIGNARD—HISTORY OF ONE [*C. Pagès*].—Under this name is designated in France among slaughtering-house butchers the sheep that leads the others to the place of slaughter. Without him the flock runs away. This mignard is better treated than other sheep; he is left loose in the house; sometimes, but *very rarely*, he drinks blood and eats meat, refusing gradually his ordinary food more and more. After a year of this régime, he loses flesh and must in his turn be killed. At the autopsy there is always *fatty infiltration* of the liver and of some muscles. The author has observed one which was particularly carnivorous; he sometimes would drink blood out of the pail where it was received; oftener he would eat the tenderloins of steers; but he preferred above all the intrathoracic fat of the calf. By degrees he refused dry hay, then green grass and finally oats, of which plenty was offered him; he grew thin and was killed. At the autopsy the digestive canal appeared normal, the rumen smaller than usual, lungs manifestly whiter, the *liver was twice its normal size and white, with scarcely reddish hue as in animals fed with milk*. The meat has the aspect of that of a fat dog, alternately of a brown or of a pale greyish hue, although less marked. It was very good to eat. This story shows that (1) experiments in feeding to be significant must be carried on a long time; (2) that herbivorous animals adapt themselves with more difficulty than generally believed to meat régime; (3) the adaptation of the digestive canal seems easy; that of nutrition is about impossible; (4) the animal has no conscience of the danger, the stomach would warn him, the liver does not; (5) after a certain time, return to the normal state is



impossible ; (6) the predominant lesion is the fatty *infiltration* of the pale muscles and of the liver ; (7) it is probable that this fat is principally of alimentary origin and that the *impossibility* (for the mignard) to be adapted to meat régime is principally due to the *impossibility to assimilate animal fats*, or at least that of large animals.—(*Soc. de Biology.*)

CANCER OF THE LEFT SAC OF THE STOMACH IN THE HORSE [*MM. Petit and Fayet*].—Epitheliomas of the left sac of the stomach have their origin in the œsophageal mucous membrane, which spreads in the gastric sac. Their histological characters are those of pavementous epitheliomas. They are quite common. A twelve-year-old horse, which has never been laid up except for an attack of bronchitis or one of synovitis, seems to lose strength, his appetite becomes capricious, his general condition is poor, and finally he has enteritis with dull colics, looking at his flanks, kicking at his sternum ; the pains increase after meals. Deglutition is easy, but as soon as the alimentary bolus has passed the cervical portion of the œsophagus, the animal exhibits marked indications of painful anxiety. Death follows in an excessively lean and reduced condition, due to inanition. In opening the stomach a large cauliflower tumor is found about the middle of the large curvature ; it is as big as two fists, measures 18 centimeters in length, 10 to 12 in width, 8 to 10 in height. It is not pedunculated, but adherent by a very wide base. Situated on the boundary line of the sacs, it extends more on the left and pushes in front the mucous membrane of the right. The tumor is hard, firm and hollowed with pseudo-cystic cavities which contain puriform liquid of a repulsive odor. Another small patch of similar nature exists near the cardia.—(*Bullet. de la Soc. Cent.*)

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#### ENGLISH REVIEW.

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By Prof. A. LIAUTARD, M D., V. M.

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PARALYSIS OF THE BLADDER (*Th. Parker, M. R. C. V. S.*).—Veterinarians, like doctors, will sometimes disagree. A five-year-old chestnut gelding required the care of the author. The urine is passed only in small quantities, dribbling or coming away in jets ; the animal does not feel as well as usual. Another veterinarian, higher in grade, suspected the cause to be slight injury of the penis during grooming. Dr. Parker sees

him again the next day and finds him lying down, with respiration, temperature and pulse normal. The animal has no desire to rise and shows paralysis of the lumbar region. Rectal examination detects a bladder greatly distended, and 21 pints of amber colored fluid was removed. Treatment ordered: hand rubbing over the loins, good bed, light food, bicarbonate of potassium in drinks, nux vomica and gentian. Next day eight pints of liquid are again removed. The higher-grade veterinarian sees him again, makes a diagnosis of azoturia and orders aloes, hot blankets, hand rubbing, etc. In the presence of the difference of diagnosis between azoturia and that of paralysis of the bladder made by the author, the case was referred to higher authority and finally left over to Dr. Parker to treat as he thought best. His treatment was taken up again; in a few hours the horse showed improvement, and got up. Some little trouble occurred again between Dr. Parker and the other veterinarian, but finally he had entire charge, with the result that in a few days the horse got entirely well.—(*Veter. Record.*) [We might say, "lucky horse," and at the same time cannot help thinking how unfortunate it is to read of such petty difficulties arising between veterinarians and being made public.—EDITOR.]

FOREIGN BODY IN ŒSOPHAGUS OF DOG [*H. G. Simpson, F. R. C. V. S.*].—Bones are good for dogs, but they are not without danger for them. A young terrier had been feeding on chopped meat and shortly afterwards was seen making violent efforts to vomit. Nothing abnormal could be found on examination of the throat or of the œsophagus. A small probang introduced failed to reveal the presence of any obstruction. A purge and bismuth were given and partly rejected, but a second purge was kept. Vomiting seemed to subside, but the dog showed great pains. He died the next day. At post-mortem a piece of "jagged" bone was found, obstructing the œsophagus, which it had broken through and having punctured the left lung. In the chest there was a thick fluid mixed with the castor oil. On passing the probang it was found passing through the wound of the œsophagus, which accounted for the failure to detect the obstruction during life.—(*Vet. Record.*)

CALCULUS IN A HORSE—LAPAROTOMY [*J. B. Wolstenholme, F. R. C. V. S.*].—Although the attempt made was unsuccessful through a complication during the operation, the case is quite interesting. It was that of a horse, some ten years old, which had been taken with colic and no passage of feces except the little contained in the rectum. Suspecting that the

obstruction was due to foreign body of some kind, rectal examination being made, a large calculus was detected in the left flank. The horse was cast, chloroformed, the parts received a thoroughly surgical cleaning, and with fullest aseptic precautions the operation was performed by an incision of nine inches made from a point a little below the spine of the ilium, downwards and forwards. What hæmorrhage occurred was readily controlled. The peritoneum incised, the calculus pushed by an assistant, through the rectum, was extracted and the intestines closed by a continuous Lambert suture. Unfortunately, before the cutaneous wound could be closed, the animal getting from under chloroform, made one or two deep inspirations and a large portion of the intestines protruded. This it was found impossible to reduce, and the horse was shot. The calculus was a very rough "clinker," which must have damaged the mucous membrane much.—(*Veter. Journ.*)

TWO CASES OF DEATH FROM ANTE-MORTEM CLOTS IN THE HEART [*Henry Taylor, M. R. C. V. S.*].—In the first the total length of the clot measured nearly five feet. A gelding had contagious pleuro-pneumonia, with pleurisy predominant. The disease ran a typical course; the animal was doing well, but still had a certain quantity of fluid in the chest. At mid-day when he was fed he appeared as usual, and at 3 o'clock he was found dead. Post-mortem: Thoracic cavity three-quarters full of fluid. Large clot of blood in the right side of the chest, heart ruptured at the right auricle. Heart fatty and pale. In right ventricle, ante-mortem clot extending into the auricle. One is also in the left ventricle extending into aorta, and when gently pulled measures 44 inches. Continued beyond the quadrifurcation of the aorta, it followed into one of the iliacs 13½ inches more. The total length of this clot was 57½ inches.

. . . . . The second case was an animal suffering with cellulitis of near hind leg. Five days later he develops pleurisy. Being very lame in his hind leg he had to be kept in slings while treated. Improving nicely, he is found one day, after having laid down for some hours on the near side and being made to get up, unable to bear weight on the near fore leg, which besides is affected with muscular tremors, the scapular, triceps, extensors and flexor muscles being in a state of chronic spasm; and the shoe was making a tapping noise on the concrete floor. Notwithstanding treatment, this condition continued for a whole day. Auscultation of the heart was very difficult on account of the violent muscular twitchings. Slightly

relieved with spirits ether nitrosi, while morphia and bromide of potassium has failed; he at last was destroyed. Post-mortem: Hypertrophied heart; it weighed 12 pounds; ante-mortem clot in the right ventricle extending in the auricle and for 4 inches in the posterior vena cava. The clot prevented any action of the right auriculo-ventricular valve; it weighed 1 lb. 1 oz. Another clot about the size of a hen's egg was in the left ventricle. There were also lesions of pleurisy with hepatization of parts of the lungs and some small abscesses.—(*Veterin. Journal.*)

INTUSSUSCEPTION OF THE DUODENUM [*G. T. Pickering, F. R. C. V. S.*].—Cases of intussusception are of common occurrence in veterinary practice, but some possess more interest than others, either by their manifestations or probably more by the lesions that are found at the post-mortem. The following belongs to this class, as the author has failed to find a similar one on record. A horse was taken with colics, which lasted some 24 hours, and of such a nature that he was shot as incurable. His symptoms were "great pain, laying on sternum, anxious expression, partial sweats; at times threw himself on near side, looking back towards the right flank, then would get up and wander round the box and lie down with forelegs partly extended, nose and mouth pressed to the ground; about every 10 minutes passed a quantity of brown fluid from both nostrils. Pulse thready, hardly perceptible. Temperature 102, mucous membranes injected. Skin cold and clammy. No peristaltic action of the bowels. No pain on pressure over the abdomen." In the presence of such manifestations, the author not believing in recovery, advised shooting. Post-mortem: Cardial cavities full of dark clotted blood. Lungs slightly congested; liver, spleen, kidneys, healthy. Stomach distended and full of brown colored fluid, and two feet from the pyloric orifice of the stomach, the duodenum was intussuscepted back to the pyloric orifice, entirely blocking the outlet from the stomach, carrying with it a portion of the mesentery. On cutting into this part it looked like a mass of dark colored blood, due to rupture of the blood vessels.—(*Veter. Record.*)

ILIO-CÆCAL INVAGINATION IN A THOROUGHbred COLT [*W. M. Scott, F. R. C. V. S.*].—Are drastic purgatives (such as aloes, calomel, physostigmine), administered in intestinal disorders, apt to produce invagination, twist, displacement, etc.? is the question asked by the author, after relating the following case. When only nine days old a colt was attacked with mucocenteritis, with dysenteric complications. He recovered from it,

and remained healthy up to the age of six months, when one morning he was found in his paddock showing all the symptoms of ordinary colic. He had, however, a peculiar manifestation, which remained most pronounced throughout the whole sickness, viz.: at short intervals he would lie on his back from five to fifteen minutes at a time in a position similar to an animal with strangulated hernia. While in this position he seemed completely at ease. During the day the condition grew slowly worse and death occurred the next morning without a struggle. At the post-mortem there was found a small quantity of serum slightly tinged with blood, a circumscribed viscero-parietal peritonitis in the umbilical region. The mesenteric vessels were gorged with clotted blood. On undoing the invagination of the ilium through the cæcum, it was found that fifteen inches of intestines were involved, that the mucous membrane was intensely inflamed, with patches of ulceration, and that between the muscular and mucous coats there was considerable infiltration.—(*Vet. Record*).

ANOTHER CASE OF ILIO-CÆCAL INVAGINATION [*W. Paner, M. R. C. V. S.*].—This is related with different manifestations than the preceding. Some usual symptoms of abdominal pains, which failed to be relieved by treatment. Suspecting complications and a fatal result, the animal was destroyed. There again an invagination of the ilium into the cæcum was found at post-mortem, two feet of the small bowel having entered the large, so that the mucous membrane was on the external surface. By opposition to the case of Mr. Scott (above presented), the horse, instead of lying on his back, repeatedly sat on his haunches, but did not adopt the first position. But little value, therefore, can be attached to the position assumed by the sufferer, as far as diagnosis of ilio-cæcal invagination is concerned.—(*Vet. Rec.*)

RABIES is being reported quite frequently to the Minnesota Board of Health from various sections of the State. State Veterinarian Brimhall is giving them his attention.

A LARGE DELEGATION from New York City attended the annual meeting of the Veterinary Medical Association of New Jersey at Trenton, on the 8th ult. It was composed of Drs. E. B. Ackerman, George H. Berns, Roscoe R. Bell, Robert Dickson, Robert W. Ellis, and James L. Robertson, and from Ithaca, Prof. V. A. Moore, while Pennsylvania was represented by Drs. Pearson and Hoskins.



## CORRESPONDENCE.

HELP THIS COMMITTEE TO HELP THE PROFESSION.

BROOKLYN, N. Y., Jan. 4, 1903.

*Editors American Veterinary Review :*

DEAR SIRs:—The Committee on Intelligence and Education of the American Veterinary Medical Association is desirous of obtaining the following information, and thinks it might obtain the quickest results through your valuable magazine, and therefore addresses you, so that you might publish this in your next issue.

We want to know the name of each and every veterinary college in the United States and Canada, whether it is an independent school or connected with some university or agricultural college. Also, the name of the secretary or dean and the correct address of the school or its officers, so that this committee can compile a correct list of schools and get in direct communication with each and every one of them.

We would also like to find out the particular kind or class of literature the profession in the various sections of the country are desirous of having this committee bring before the public, the press, or before some public boards, departments, or societies—such as health, or agriculture departments; cattle or livestock boards, etc., as exist in the several States.

We also want to obtain a correct list of all boards of examiners connected with the Board of Regents in each State, with the address of such board or its president and secretary so that this committee can communicate directly with them.

To get this information accurately it will be necessary that this committee hear from each State and Canada, and then the lists can be made accurate and complete and with proper addresses.

The committee respectfully calls this to the attention of the Resident State Secretaries, and asks them to coöperate with this committee and to make it their business to furnish this information accurately and as soon as possible, so that we may go ahead on the lines suggested and act according to the resolutions passed at the last meeting of our Association.

Trusting you will have space to insert this in the next issue of your valuable magazine, I remain,

Very truly yours,

E. B. ACKERMAN, *Chairman.*

## DR. IDE'S CASE OF REGURGITATION OF GAS—A SIMILAR CASE.

COLUMBIANA, OHIO. Jan. 9, 1903

*Editors American Veterinary Review:*

DEAR SIRs:—I see by the January REVIEW, page 959, Dr. Ide, Lowville, N. Y., has a case that puzzles him, and wishes some light upon it. From the symptoms he gives it is a case of dilatation of the œsophagus, as I treated a case similar some three or four years ago, and I had a report of it written out, but did not send it for publication. It was that of a sorrel mare, six years old, by Semmicolon, dam Belle W. This mare's name was Susan B. An attorney of this town brought her from his father's farm, about eight miles distant, to his barn across the alley from my stable. The following day he drove her about six miles. She was taken ill on the way home, but managed to get home. I diagnosed her trouble as a case of acute indigestion; gave chloral hydrate, and finally used the trocar to relieve the flatulence. Stayed with her all night, as she was uneasy by spells. I had used eserine and pilocarpine early in the case, but in a small dose. I also gave a pint of oil. The bowels did not move any until the following evening. Next day she ate some grass and bran mashes; four days later she had a second attack, but only a mild one. One hock began to swell, and the owner made me a present of her, provided I would give him the colt she was carrying, when old enough to wean. The trouble in the hock terminated in arthritis and synovitis. I placed her in slings, tried all remedies, had three fistulous openings. One particular symptom of dilatation of the œsophagus was that the mare would eat for about ten minutes and would then discontinue for some time, and you could see the bolus moving up and down in the cervical region. A short time after she had an evacuation of the bowels the up-and-down movement of the bolus in the gullet would disappear, and she would commence eating again, but the same trouble would return. I then made inquiry of her former owner. He stated that when driving her, there appeared to be a rattling or gurgling noise. I went to the house and secured Friedberger & Fröhner's "Pathology and Therapeutics," translated by Prof. Zuill, Vol. I, page 46, from which description I diagnosed it as dilatation of the œsophagus. I kept the mare for several days longer and made a careful study of her symptoms. I finally chloroformed her and held a post-mortem, and my diagnosis was confirmed. The stomach did not have the *cul-de-sac* shape; it was

long ; the thoracic portion of the œsophagus was six inches in diameter ; all the folds were straightened out near the stomach ; it was filled like a stuffed gut or bowel half way of the cervical portion, which tapered to three inches in diameter. The stomach would have to empty before the mass could go down. The network over the stomach was torn, but in the anterior portion it was entirely gone. I suppose in former sick spells it had given away, and had become absorbed, as there was only about one-half the network I have noticed in horses that I have held post-mortems on where the stomach was ruptured. The only history of the case I could get was that Mr. Silvers (the Chester White pig man of Cleveland) had raised her, and she had, from the descriptions of symptoms, an attack of nettlerash before the attorney's father purchased her.

As to treatment, I do not know of any unless it would be molasses, or predigested food of some kind, as the food lying or remaining in the œsophagus for some time will ferment. I would suggest molasses and middlings. Have used it on calves with good results in digestive trouble. Am also giving my driving mare molasses and bran morning and evening. If the patient dies, hold post-mortem, and let us all know the lesion found.

J. B. CAUGHEY, D. V. S.

"A RECENT POLL of one of the most prosperous Western States developed the amazing fact that there were nearly 100 graduated veterinarians in that State who are not subscribers to any American or foreign veterinary journal. Any comment is unnecessary."—(*President Lowe's address to the New Jersey State V. M. Association.*)

BILL NYE once said that John Bright, having discovered the need of "a good, reliable disease for the use of the aristocratic and American statesmen," began to "sit up nights and perfect Bright's disease." He says of it: "It has been kept out of reach of the poor, and to die of this disease has been regarded as a proud distinction."—(*Iowa Medical Journal.*)

AT the January meeting of the New York County V. M. Association there was a demonstration of the use of the X-ray apparatus upon various subjects. While examining a small metallic substance in the stomach of a dog, a veterinary wag asked what could be observed by turning the rays on to the lungs. He was informed that there would be nothing observed but the ribs, to which he replied that he thought we might see the "seat of his pants."

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BIBLIOGRAPHY.

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A TEXTBOOK OF HISTOLOGY AND MICROSCOPIC ANATOMY OF THE HUMAN BODY, INCLUDING MICROSCOPIC TECHNIQUE. By Dr. Ladislaus Szymonowicz, A. Ö., Professor of Histology and Embryology in the University of Lemberg. Translated and Edited by John Bruce MacCallum, M. D., Johns Hopkins University, Baltimore. Illustrated with 277 Engravings, including 57 Plates in Color and Monochrome. Lea Bros. & Co., Philadelphia and New York. 1902. Pp. 435. Cloth. \$3. net.

A good knowledge of histology is absolutely essential to an adequate conception of such medical subjects as physiology, pathology, therapeutics and the processes of repair of tissues. Fortunately there is no branch of medical science which affords a more fascinating study than histology. This is especially so now that Szymonowicz-MacCallum has appeared in the book market. This work is printed in large type upon excellent paper, and is attractively and durably bound. The illustrations are noteworthy on account of their abundance and the excellence of their execution. Whenever one feels the need of a figure or plate to explain the text, it is always to be found. Of the plates, some are in color and some in monochrome. These are so inviting as to compel attention to them. They markedly facilitate the study of the subject. Writing as I am for veterinary students and practitioners, it may be well to state that, although the title of the book sets forth that it is a "Histology of the Human Body," out of a total of 180 figures and 42 plates, exclusive of those which are diagrammatic, there are 119 figures and 22 plates made from 19 different species of lower animals as against 61 figures and 20 plates made from the human body. The veterinarian, therefore, may study this book with the assurance that it is in reality a safe and helpful guide to him in the study of animal histology. The price is very low considering the character of the book.

Part I of the book treats of the *cell* and the various *tissues* which enter into the structure of the animal body. Part II treats of the *microscopic anatomy* of the various organs. The appendix discusses in a singularly concise and helpful way the subject of *general microscopic technique*. The language of the book is remarkably intelligible and readable, with complete absence of unnecessarily technical language. Due credit is given to American authors for their work, something unusual in a foreign book. MacCallum has made numerous additions both in the text and in the illustrations. It is important to note that

he has admirably succeeded in embodying the very latest researches upon the subjects with which the book deals. I can heartily and unreservedly recommend this book to students and practitioners of veterinary medicine.

JOHN J. REPP, V. M. D.

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## OBITUARY.

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JUNIUS H. WATTLES, SR., of Kansas City, Mo., died at his home in that city, on Nov. 9, from the effects of ptomaine poisoning, both he and his wife having become ill after eating calves' brains. This occurred the latter part of September, and, while Mrs. Wattles completely recovered, the doctor never regained his health. He was born in Wisconsin in 1855 and graduated from the Chicago Veterinary College in 1887, and in 1891 established the Kansas City Veterinary College. In 1897, having severed his connection with this institution he founded the Western Veterinary College, in that city, of which he was dean until his death. A widow and a son, Dr. Junius H. Wattles, Jr., survive him.

JOHN AIRTH, M. R. C. V. S., of Sioux City, Iowa, died in the early part of November from asphyxia, due to his having inadvertently turned on the gas in a stove which he used for heating purposes. He had been in active practice in Sioux City for the past seven years.

ANTIDOTE FOR FORMALDEHYDE.—In view of the fact that this chemical is coming more and more into general use as a disinfectant and antiseptic, cases of poisoning from it will become more frequent. We have an easily accessible and reliable antidote in ammonia water (a few drops well diluted) or the aromatic spirit of ammonium.—(*Merck's Arch.*)

"MALARIAL FEVER IN HORSES," so ably described at the last meeting of the A. V. M. A., by Dr. Fred. Torrance, which has been so fatal to horses in Manitoba, and which has been under investigation for a number of years, has, says the Minneapolis (Minn.) *Tribune*, recently been the subject of further study by Drs. Bell and Torrance, in conjunction with Drs. Westbrook and Brimhall, of the Minnesota State Board of Health, and that all have practically agreed that it is microbial in nature.



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## SOCIETY MEETINGS.

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### VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The annual meeting was called to order on the morning of January 8th, 1903, in the parlors of the Trenton House, Trenton, N. J. The President, Dr. Wm. Herbert Lowe, occupied the chair. Records of the semi-annual meeting held at Newark, July 10th, 1902, were read and approved.

Applications for membership were on file as follows: Drs. Vernon B. Height, of Asbury Park; H. R. Clark, of Long Branch; J. H. Conover, of Flemington, and J. B. Jones, of Atlantic City. All applicants were duly vouched for and approved by the Executive Committee, and were by unanimous vote admitted to membership.

A bill to change Article III of the Constitution came before the members for final action. This bill, which came before the last semi-annual meeting for first reading, had bearing upon eligibility for membership. The change proposed was essential, owing to the existence of the new law enacted at the last session of the Legislature, and provided that candidates for membership entering the profession on or after the first Monday in May, 1902, must be licensed by the State Board of Veterinary Medical Examiners and be registered in conformity with the provisions of Chapter 18, Laws of 1902. By vote of the Association the change in the Constitution was adopted.

A report from the Legislation Committee revealed the fact that there were some violations of the newly enacted law regulating the practice of veterinary medicine, surgery, etc. Dr. A. T. Sellers, of Camden, reported a case of illegal practice. Dr. Vernon B. Height, of Asbury Park, reported that with Dr. H. R. Clark, of Long Branch, he had been instrumental in the arrest of an illegal practitioner in his section of the State. The case was to have come before the Grand Jury on the day of the meeting, January 8th, and the fact that the defendant had communicated with his accusers, seeking for clemency, would indicate his acknowledgment of guilt and fear of retribution. The report of Legislation Committee brought forth some discussion as to the proper method of dealing with violators of the law. Drs. T. E. Smith and T. B. Rogers, of the State Board of Examiners, spoke for the Board and requested that cases of violation of the law be reported to them whenever

the evidence was of such a character as to warrant prosecution.

The special committee appointed to investigate delinquents, reported that letters had been sent to or personal calls had been made upon such members and that in some cases no reply had been received from courteous communications; that in some other cases where a personal visit was made, members of the committee had been treated in a discourteous and insulting manner. It was recommended that eleven names be dropped from the Association membership. The vote of the Association to act in accordance with the recommendation of the committee was a unanimous one.

The following delegates reported:

Dr. T. Earle Budd for the delegation to the Atlantic City Horse Show.

Drs. Smith and Glennon, delegates to the recent meeting of the American Veterinary Medical Association at Minneapolis.

Dr. L. P. Hurley, delegate to the Pennsylvania Veterinary Medical Association, and Dr. S. S. Treadwell to the New York State Association.

At this time under the regular order of business occurred the election of officers for the ensuing two years. The following were unanimously chosen by ballot:

President—Dr. Wm. Herbert Lowe, Paterson.

First Vice-President—Dr. T. B. Rogers, Woodbury.

Second Vice-President—Dr. H. Vander Roest, Newark.

Secretary—Dr. George W. Pope, Athenia.

Treasurer—Dr. James M. Mecray, Maple Shade.

It was voted that \$50 per annum be devoted to the Secretary's use for employing a stenographer and typewriter.

Following the election of officers, the President made his annual address. As this address is published elsewhere in this number of the REVIEW, but passing mention will be made of the chief suggestions, which were: (1)—The appointment of a conference committee to confer with State officials, visit State agriculture and experiment stations, etc.; (2)—The establishment of a State Veterinary Library; (3)—A two days' session of the Association; (4)—The establishment of a bureau with a State Veterinarian in charge. Said bureau to be to the State what the Bureau of Animal Industry is to the country at large.

Following the President's address the following visitors were introduced: Dr. E. B. Voorhees, President of the State Board of Agriculture; Hon. Franklin Dye, Secretary of the State Board of Agriculture; Hon. S. B. Kitcham, of the State

Tuberculosis Commission; Dr. Veranus A. Moore, of Ithaca, N. Y.; Drs. Bell, Berns and Ackerman of Brooklyn; Drs. Robertson, Ellis and Dickon, of New York; Drs. Pearson and Hoskins, of Philadelphia.

Dr. Voorhees highly commended the suggestions embodied in the President's address and explained the need of some one division of the State Government to which animal industry matters could be referred; at the present time there existed the State Board of Agriculture, the Tuberculosis Commission and the Dairy Commission, to which bodies communications and requests are frequently sent indiscriminately, thus necessitating delay and question as to the extent of authority of these several divisions of the public service.

Hon. Franklin Dye, Secretary of the State Board of Agriculture, also addressed the meeting and invited the Association to apply for membership in the State Board of Agriculture. It was voted to make such application and if received empower the President to appoint the two delegates allowable to the Association as members.

At 1 P. M. the meeting adjourned for dinner, reconvening at 2.30.

Under "New Business," Dr. Vander Roest stated that the Essex Co. Board of Health would without doubt in the near future appoint a meat inspector, and it was voted that the Secretary be authorized to communicate with the Board and respectfully request that in case such an appointment was made the office be filled by a qualified veterinarian.

It was also voted that a Conference Committee be appointed with power to carry out the suggestions incorporated in Dr. Lowe's address. The literary feature of the meeting was a paper presented by Dr. Veranus A. Moore, of Cornell University. The paper was entitled "Etiology and Prevention of Infectious Diseases of Animals."\* Following the reading of the paper Dr. Moore, with the aid of lantern slides, gave a fine demonstration of various forms of bacteria. It would not be possible to reproduce Dr. Moore's extemporaneous remarks while the stereopticon was in operation, but suffice it to say that he held the attention of his hearers from first to last.

Dr. T. B. Rogers, of the State Board of Examiners, read a paper entitled "The Relation of the State Boards of Examiners to the Teaching Schools, the Profession and the State." Dr. Rogers' paper elicited a discussion, in which Drs. Robertson,

\* Published elsewhere in this number of the REVIEW.

Hoskins, Berns, Pearson, Ackerman, Bell and others participated.

Dr. Pearson made a brief report of his experiments in immunizing animals against tuberculosis.

It was voted to hold the semi-annual meeting in July, 1903, with the Secretary at Athenia.

President Lowe announced that he would appoint committees and delegates in the near future.

GEORGE W. POPE, *Secretary*.

#### SCHUYLKILL VALLEY VETERINARY ASSOCIATION.

The semi-annual meeting of this Association was held on Wednesday, December 17, 1902, at the Board of Trade Room, Reading, Pa., with Dr. Otto G. Noack, President, in the chair, and Dr. W. G. Huyett acting as Secretary. On roll-call the following members responded to their names: Drs. D. R. Kohler, Boyertown; G. A. Wehr, Denver; Otto G. Noack, Reading; F. H. McCarthy, Pottsville; W. G. Huyett, Wernersville; F. H. Schneider, Philadelphia; S. G. Burkholder, Rothville; I. C. Newhard, Ashland; E. D. Longacre, Shenandoah; and W. S. Longacre, Mantz. Among the visitors were Drs. Leonard Pearson, University of Pennsylvania; E. M. Ranck, Glenolden; Jacob B. Leber, Ephrata; and Jacob N. Becker, Palmyra.

The minutes of the previous meeting were read and approved. The Treasurer, Dr. F. H. McCarthy handed in a satisfactory report, leaving us about \$35 in the treasury, after all bills had been paid. The President delivered his address, which was concise as usual, but very comprehensive. After dwelling upon the work this Association has accomplished, he referred to the duties of the veterinarian in relation to the agricultural interests, specially in connection with the spread of infectious diseases communicable to man. He furthermore expressed a strong desire for a higher standard of the profession, claiming that a great advance to that effect would be gained by having all veterinary colleges under State supervision, instead of being private institutions.

The Association received their charter, which was read by the Secretary. A motion was made and seconded that same be accepted as satisfactory, thus now rendering it an incorporated body. A few favorable remarks were given by Drs. Wehr and Kohler, delegates to the State Convention.

The Society then adjourned for luncheon, convening again at 1.30 P. M.

The President offered the following resolutions :

WHEREAS, By the change of Governor the question of appointment of State Veterinarian arises ; and

WHEREAS, The present incumbent, Dr. Leonard Pearson, has shown himself able and fully competent in the execution of the duties required by this office ; be it

*Resolved*, That this Association recommends and urges his reappointment for this office to Governor-elect Pennypacker.

WHEREAS, A bill, known as the Anti-Vivisection bill is introduced in the United States Senate to prohibit and make unlawful experiments on living animals ; and

WHEREAS, The passage of such act would seriously interfere with the study of medical students ; therefore be it

*Resolved*, That this Association protests against the passage of said act and shall urge the Senators of this State to try to defeat this bill.

WHEREAS, This meeting of the Schuylkill Valley Veterinary Association has been one of the most successful that has ever been held by this organization ; and

WHEREAS, This was only possible through the courtesy and kindness of Drs. Pearson, Ranck, and Burkholder to attend and favor us with their instructive essays ; be it

*Resolved*, That the thanks of this Association are hereby extended to them for their aid to make this our meeting a success, and we thereby express our deep appreciation of the same.

These resolutions were approved as read, and ordered to be spread upon the minutes.

A recess was then given for the collection of dues. After adjournment the chairman of the Committee of Intelligence and Education was called upon, and Dr. W. S. Longacre afforded a few appropriate remarks.

Dr. D. R. Kohler, Boyertown, read a paper on the subject of "Parturient Paralysis ;" \* the paper was very practical, affording some instructive points, and was thoroughly discussed by most of the members and visitors present. A motion was made and carried tendering a vote of thanks to Dr. Kohler for his valuable paper.

Owing to Dr. Wehr not being prepared with his paper on "Pleuro-Pneumonia-" he favored the audience by a general talk upon the subject. It being very familiar, and a disease common to every practitioner, much comment was offered upon the treatment.

Dr. Pearson narrated the latest treatment at the University of Pennsylvania. He considers it desirable to tap off the serum as soon as significant symptoms are in evidence, as he states the operation is too often performed with results fatal, in which case

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\* Published elsewhere in this number.



success prevails if performed earlier. The doctor prefers strophanthus to digitalis for weakness of the heart's action, owing to the latter drug producing an intermittent pulse after using for three days. The subject was also discussed by Drs. Wehr, Longacre (E. D.), Kohler, Huyett, Noack, and Newhard.

Dr. E. M. Ranck favored the Association by an ably prepared paper on "Sera in the Blood," after which he was called upon by the President to give a general talk upon the preparation of antitoxins, he being an authority along that line of no mean repute. He says, in the production of antitoxins, the selection of the horse is a matter of extreme importance; this work being under the immediate personal control of skilled veterinarians, who fix an absolute and invariable standard as to the character of the animal employed; each horse has to withstand a rigid physical examination, after which he is respectively injected with tuberculin and mallein. After this inspection, the selected horses are placed and kept in a specially constructed stable that is a model of sanitary perfection. A very small proportion of horses meeting the rigid requirements of physical soundness and health will yield antitoxin of sufficient unit strength, and hence those are discarded. The toxins are elaborated from the specific germ of the disease, then cultivated in some suitable culture media. After the expiration of the period of time required to obtain the greatest strength, the bacteria (germs) are killed by the addition of trikresol to the cultures, which are then repeatedly filtered in order to remove the destroyed germs. The definite unit strength of these toxins is determined by a series of injections into guinea-pigs, and thus ascertaining the minimum quantity of toxin which proves fatal to a guinea-pig, within a certain fixed period of time. This quantity of toxin (unit strength) is now injected into the horse under aseptic conditions. These injections (small at first) are repeated at regular intervals in order to obtain the degree of tolerance of immunity. A horse gradually acquires to the influence of the toxins upon the system, and the blood develops the property of neutralizing these toxins. The injections of toxins are repeated in gradually increasing doses once every week until the horse receives and tolerates without untoward symptoms, a quantity of toxins equal to one thousand times the amount of the first injection, this process consuming, on the average, about four to six months.

The horse is now bled into a previously sterilized parchment covered jar, is then allowed to stand for a few days, when the

serum collects on top and the clot or solid constituents to bottom of jar. The serum is now removed by a suction pump and transferred to sterile jars. Contamination of the serum, he says, is absolutely impossible, as at no stage of the process of antitoxin preparation is it in contact with the outside air.

The antiseptic trikresol is now added as a preservative, after which the strength of same is determined by experimenting upon guinea-pigs.

Discussions were participated in by Drs. Schneider, Wehr and Newhard.

A vote of thanks was extended Dr. Ranck for his instructive remarks. Dr. E. M. Ranck is employed by the H. K. Mulford Company at their Vaccine Laboratory, Glenolden, Delaware Co., Penna.

Dr. Leonard Pearson entertained the audience for some time with a paper entitled, "The Veterinary Teacher and Practitioner," after which he described his trip to the New England States, in order to investigate the outbreak of foot-and-mouth disease. He gave an excellent general report, which was highly appreciated. He also referred to the experiments upon the immunization of cattle against tuberculosis, conducted at present by Dr. S. H. Gilliland and himself. Similar experiments have been conducted by McFadyean in June, 1901, and March, 1902, also by von Behring, December, 1901, but the observation thus attained from their reports certify that their experiments are yet incomplete. He (Pearson) says that tuberculosis of cattle has been the subject of special and extensive study and experimentation in the laboratory and research station of the Pennsylvania State Live-Stock Sanitary Board since 1896. During this time the virulence of cattle and other animals to tubercle culture and material from many sources have been tested by Dr. M. P. Ravenel, Dr. John J. Repp, Dr. Gilliland and himself. Much enthusiasm was expressed by the audience upon the remarks of Dr. Pearson, as most of the members were unaware of such a project, and all present were heartily in sympathy with such a stride of advancement in our profession. We all sincerely hope the experiments under way may prove successful, thus restraining the most insidious contagious disease upon the earth.

Dr. S. G. Burkholder's essay, on the "Relation of the Veterinarian to the Medical Profession," was replete with interesting and besides instructive thoughts. It will be published in an early issue of the REVIEW.

A vote of thanks was extended Drs. Pearson and Burkholder, and resolutions framed to that effect.

Motion was made and seconded to adjourn at 4.30 P. M.

W. G. HUVETT, *Cor. Sec.*

### ONTARIO VETERINARY ASSOCIATION.

The annual meeting was held in the Veterinary College, Toronto, on Dec. 24, 1902, the President, Dr. J. H. Tennent, in the chair. He opened the meeting by an excellent address, in which the object in view was evidently the mutual improvement of members in all branches of veterinary science, both practically and theoretically, and the advancement of the position and interests of the veterinary profession in the Province of Ontario. Several of the points brought up elicited considerable but amicable discussion, in which many members participated.

The minutes of the previous meeting were read and adopted.

The Secretary-Treasurer and Registrar's report was then presented. It showed a large amount of correspondence, considerable printing, and a new copy of the Register issued containing a full list of those registered in accordance with the Act of Incorporation of the Ontario Veterinary Association, complete up to July 31st, 1902, containing also the Act of Incorporation. 55 graduates have registered since the last annual meeting. The finances were in a good condition, there being \$22 more cash in the hands of the Treasurer than at the opening of the meeting last year.

The following new members were duly proposed and elected: R. H. Cook, V. S., of Malton; J. M. Young, V. S., of Oil Springs; J. D. McLeod, V. S., of Harrison; and A. E. James, V. S., of Ottawa.

The business routine being concluded, at the invitation of Prof. A. Smith the members adjourned for lunch.

The meeting opened again immediately after lunch. Dr. J. D. O'Neil read an excellent and practical paper on "Soundness and Unsoundness in Horses," and the duties and liabilities of the veterinary practitioner in successfully acquitting himself in the performance of this necessary and important duty.

Dr. S. E. Boulter contributed an article on a case of tetanus in the horse—evidently a very severe case.

Dr. R. Barnes also contributed a paper on tetanus. This was a severe case. The medicinal treatment consisted principally of frequent hypodermic injections of solutions of carbolic

acid and glycerine in water. Complete recovery resulted after about 40 days.

The reading of these papers elicited considerable discussion, in which a number of members participated. The discussions were interesting and instructive.

The President suggested that some of the members should volunteer to attend the next annual meeting and perform some of the interesting surgical operations before the members for mutual benefit.

In response Dr. George would operate and Dr. Breton, of Detroit, was spoken of to perform an operation for roaring.

Dr. Stevens exhibited a very ingenious instrument of his own invention for grasping the foetus, in cases of difficult parturition.

Dr. Rutherford, of Ottawa, Chief Veterinary Surgeon of the Dominion of Canada, gave an eloquent and stirring address. He said he had resided and practiced in the Province of Manitoba for several years. He said that no man can legally practice veterinary science in that Province unless he is a member of the Manitoba Medical Association, and he trusted that the members of the Ontario Veterinary Association, by standing shoulder to shoulder, would eventually obtain the same result in Ontario. He gave a most interesting account of the meeting of the American Veterinary Medical Association recently held in Minneapolis, of which he had been elected Vice-President. He had attended that meeting. He said that the clinical work performed there had been done by the most skilful practitioners in America. He had succeeded in inducing that Association to hold its next meeting in the City of Ottawa, Canada, and he strongly urged the members of the Ontario Veterinary Association to attend that meeting, which will be held in September next.

The President and Dr. D. K. Smith were appointed to represent this Association at the American Veterinary Medical Association meeting in Ottawa, also to aid Dr. Rutherford in entertaining its members there, and the sum of \$100 was appropriated to be forwarded to Dr. Rutherford to pay a share of the expenses of the American Veterinary Medical Association in Ottawa.

Amongst the most important communications read was one from the President of the Industrial Exhibition Association of Toronto, requesting the cordial approval and active support of the Ontario Veterinary Association in holding a Dominion Exhibition in Toronto in 1903. A resolution to that effect was passed at once without a dissentient voice.

There having been some discussions on breaches of professional ethics, the Committee on the Revision of the By-Laws requested permission to defer their report until the next meeting.

The election of officers then took place, with the result that all the officers of the Association were re-elected for another term of office.

The sum of \$25 was voted for a medal to be presented for competition to the graduating class of the Ontario Veterinary College at the next Spring examinations.

And the meeting adjourned.

C. H. SWEETAPPLE, *Secretary*.

#### VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular monthly meeting was held on Wednesday, January 7th, at 8 p. m., with Vice-President J. E. Ryder in the chair. Members present:—Drs. Ryder, Bell, Robertson, McCully, Grenside, Bowers, Keller, Mangin, Dickson, Ackerman, Sherwood, O'Shea, Burns, Ellis. Visitors:—Drs. Critcherson, Strange, Stimpson, Morris, Hayes, Wells and W. C. Miller, also students of N. Y.-A. V. C.

The minutes of the last meeting were read and approved. The *Comitia Minora* had nothing to report.

Dr. Roscoe R. Bell then reported some cases of poisoning of horses by arsenic among the Polish Jews, where he had been called in consultation and presented sections of the stomach and intestines showing marked inflammatory processes from the action of the drug. He recommends sesquie-oxide of iron in large solution in suspected cases, but thought that in those cases which presented symptoms unmistakably of poisoning, there was very little hope from medical treatment.

Cocaine and morphine, either separately or in combination, as a curative and diagnostic, was brought forward for discussion by Dr. Clayton, and was well discussed. Drs. Robertson and Strange, both reporting one instance each where it had acted as a curative in a case of lameness of a year's standing. Discussion entered into by Drs. Ryder, Critcherson and Bowers.

Dr. Ryder presented a champignon which he had lately removed from a horse, it being very large. Dr. W. C. Miller has kindly consented to have sections of it made and also the botryomyces stained and on view at the next meeting for the benefit of the members.



Dr. Bell asked those present if they had ever heard of a *pure* white colt being foaled, as he had been asked that question by a layman. Dr. McCully stated that he had heard of one.

Dr. Critcherson reported another case of luxation of the patella, which had been well discussed at the last meeting. He also stated that after the usual methods of replacing had been tried without results, he put a side-line around the lower part of affected leg and had traction made toward the opposite side and in a backward rotating or circular movement, when replacement immediately took place.

Dr. Ellis stated that he would have a detailed report of a case of rabies in a dog which bit a horse, both animals dying from the disease; also the report of the inoculations made from both animals.

Dr. W. C. Miller, after explaining the philosophy of the X-ray and its practical uses, exhibited several specimens of broken bones in animals and some in the members present, the union of the broken bones being shown most distinctly. He also exhibited a dog having a small metallic substance in his stomach, which could be plainly seen by the aid of the rays. This proved of great interest as well as instructive to all present.

Adjourned.

C. E. CLAYTON, *Secretary*.

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#### PASSAIC COUNTY VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting was held at 169 Paterson Street, Paterson, N. J., on Tuesday evening, January 6, 1903, with Dr. William Herbert Lowe, President, in the chair, and Dr. T. J. Cooper acting as Secretary. On roll-call the following members answered to their names:—Drs. William J. Fredericks, Delawanna; T. J. Cooper, Paterson; John H. Degraw, Paterson; J. Payne Lowe, Passaic; W. H. Lowe, Jr., Paterson, and William Herbert Lowe, Paterson.

The minutes of Dec. 2d were read and approved.

Dr. Cooper brought up the matter of arranging to provide a substitute in the event of a practitioner being sick or called out of town.

Dr. Cooper thought one of the best ways of promoting the mutual interests of members was by each practitioner reporting from time to time such cases in his practice as were not responding satisfactorily to treatment.

Dr. J. Payne Lowe was in favor of the Association paying

the expense of practitioners in sending specimens to the State Laboratory at Trenton for bacteriological examination in cases where the Association received the benefit of such examination. He cited cases of dumb rabies in the dog, diphtheria in the cat, and so on, where the practitioner from a clinical standpoint readily made out a diagnosis, but where in many instances it would be advisable to have the diagnosis confirmed by bacteriological examination or inoculation experiments.

The several matters brought up under "New Business" were laid over.

A letter was read from Dr. William C. Berry to the effect that he was quarantined at his home in the upper part of the county on account of the existence of scarlet fever in his family, and consequently could not attend. On motion of Dr. W. H. Lowe, Jr., the Secretary was instructed to write a suitable letter to Dr. Berry, conveying to him the sympathy of his fellow-members.

Dr. Fredericks read a paper giving his experience with "Iodide of Potassium and Eserine in the Treatment of Parturient Paresis." Three cases that he had treated with these drugs recovered. Dr. Fredericks injects 3 grs. eserine subcutaneously. Dr. J. Payne Lowe remarked that there was one thing sure and that was that we did not kill any of our cases of parturient paresis now by drenching since we had adopted the modern method of treatment.

Dr. Cooper told of a peculiar case of lameness in a mare in foal and promised to produce the mare in evidence at the next meeting.

The President appointed Dr. W. H. Lowe, Jr., essayist for the next meeting. On motion meeting adjourned at 10 P. M.

T. J. COOPER, *Secretary pro tem.*

#### THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION

will hold its twenty-first semi-annual meeting in Morrow Hall, Agricultural Building, Champaign, Ill., Tuesday, February 17th, 1903. Among the topics for discussion are the following: "Intestinal Catarrh of the Ox," Dr. F. H. Barr, Pana; "Azoturia and its Treatment," Dr. F. H. Ames, Canton; "Veterinary Obstetrics," Dr. W. J. Martin, Kankakee; "Fraternalism in Veterinary Science," Dr. T. W. Corkery, Urbana; (Subject not yet announced), Dr. C. C. Mills, Decatur; Reports of Cases, Dr. S. S. Baker, Chicago; "Tetanus and its Treatment," Prof. D. McIntosh, Champaign. All will be cordially welcome.

W. H. WELCH, *Secretary.*

## NEWS AND ITEMS.

DR. OTTO GEBHARD, (O. V. C., '94), was elected Sheriff of Cheboygan County, Mich., last fall.

DR. V. P. SMITH, of Washington, C. H., Ohio, is advocating and selling a sure-cure for hog cholera, which he advertises in circus-like fashion.

DR. C. C. STEVENS, who with his father, Dr. J. B. Stevens, composed the firm of Stevens & Son, of Yale, Mich., has withdrawn from the firm and is now conducting a practice in Byron, Mich.

ANOTHER ELEPHANT PUT TO DEATH.—Following closely upon the destruction of "Dangerous Tom," at the Bronx Zoölogical Park, another man-killing elephant has received a like treatment, though by a swifter method. "Tom" was poisoned by the cyanide of potassium, about 600 grains requiring nearly an hour to stop the heart. It was "Tops," the elephant which has been exhibited at Coney Island, New York, for some time, and who has during her career killed three men, and seemed ready to add to the list at any time. She was the original baby elephant, and was about 28 years old. She was brought to this country when eight years old, weighed when killed about six tons, and was valued at \$6000. It was the original intention of those in charge to strangle her with a strong noose made of rope, but she refused to walk into it. About 450 grains of cyanide of potassium, concealed in carrots, were administered, but no effects were observed from the deadly poison. Wires were strung from the Edison electric plant, two blocks away. Heavy iron plates were then cut and shaped like the bottom of the elephant's feet, and these were fastened to small pieces of board. The board and iron plate were then fastened to the feet, shoe fashion, one of them on the right fore foot and the other one on the left hind foot. The wires were then attached to the plates, workmen chained her to stout pins that had been driven into the ground and a heavy rope was fastened around her neck. She was eating apples, when the announcement was made that all was in readiness for turning on electricity, when six thousand volts were thrown on, and smoke and blue flame emerged from the two feet to which were fastened the plates and wires. The chains and ropes snapped like threads as the big beast began to swerve, and she fell over on her right side. Dr. H. J. Brotheridge, of Brooklyn, pronounced her dead in twenty-two seconds after the electricity was turned on.

## PUBLISHERS' DEPARTMENT.

*Subscription price, \$3 per annum, invariably in advance; foreign countries, \$3.60; students while attending college, \$2; single copies, 25 cents.*

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*Alex. Eger, 34 East Van Buren St., Chicago, Ill., Veterinary Publisher and dealer in Veterinary Instruments, Books, and Drugs, is the authorized agent for the REVIEW in Chicago and the Middle West, and will receive subscriptions and advertisements at publishers' rates.*

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DURING the winter months, when coughs are so apt to assume a chronic form, nothing is so gratifying to the practitioner, as Glyco-Heroin (Smith), which has proven itself infallible in conditions of this kind. For full information turn to page 2 (ad. dept.).

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"BALLING UP" is positively prevented, if during the snow season, horses are shod with the "Air-Cushion Rubber Horse Shoe Pad," manufactured by the Revere Rubber Co., whose ad. appears on page 4 (ad. dept.), and they prevent slipping.

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FARBENFABRIKEN, of Elberfeld Co., whose ad. appears at the foot of page 4 (ad. dept.) have a most interesting list of drug preparations, which they furnish veterinary practitioners, and in the results of their application to veterinary practice, they are very much interested.

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Atkins and Durbrow's digestive regulator, advertised at the top of page 8 (ad. dept.), continues to grow in favor with the veterinary profession. There are many reasons why this is so. First, it is NOT A SECRET PREPARATION; the formula is furnished to veterinarians on application. Second, it is a purely vegetable and excellent preparation, and it is offered to the horse owners through their veterinary advisors.

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The Abbott Alkaloidal Co., whose full-page ad. appears on the inside of the back cover page, which position it has occupied for more than three years, are still the leaders in these preparations. This house has for many years held the exalted position with the medical profession which it enjoys to-day, but it is especially interesting to veterinarians to recall that they are the pioneers as regards ALKALOMETRY IN VETERINARY PRACTICE.

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